

STP 31-18B34-SM-TG

**Soldier's Manual and
Trainer's Guide MOS 18B
Special Forces Weapons
Sergeant
Skill Levels 3 and 4**

OCTOBER 2004

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SOLDIER'S MANUAL and TRAINER'S GUIDE

MOS 18B

Soldier's Manual and Trainer's Guide MOS 18B Special Forces Weapons Sergeant

Skill Levels 3 and 4

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PREFACE

This Soldier's training publication (STP) is for skill levels (SLs) 3 and 4 Soldiers holding military occupational specialty (MOS) 18B in career management field (CMF) 18, their trainers and first-line supervisors. It contains standardized training objectives, in the form of task summaries that can be used to train and evaluate Soldiers on critical tasks that support unit missions during wartime and peacetime operations.

Soldiers holding MOS 18B, SLs 3 and 4, should have access to this publication. Trainers and first-line supervisors must ensure it is available in the Soldier's work areas, unit learning centers, and unit libraries. However, there is no requirement for each Soldier to be provided an individual copy. Commanders will ensure this publication is readily available to all Soldiers.

All tasks in this manual are applicable to both the Active Army and Reserve Component (RC) Soldiers. However, due to differences in tables of organization and equipment (TOEs) and missions, some tasks may not apply to all Special Forces (SF) units.

Users of this publication are encouraged to recommend changes and submit comments for its improvement. They should key comments to specific page, paragraph, and line of the text in which the change is recommended. They should provide reasons for each comment to ensure understanding and complete evaluation. Comments should be prepared using Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded to Commander, United States Army John F. Kennedy Special Warfare Center and School, ATTN: AOJK-DT-SFI, Fort Bragg, North Carolina 28310-5000.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

CHAPTER 1

Introduction

1-1. General.

a. This Soldier's manual (SM) identifies the individual MOS training requirement for Soldiers in MOS 18B. Commanders, trainers, and Soldiers should use it to plan, conduct, and evaluate individual training in units. This manual is the primary MOS reference to support the self-development and training of the Soldier. Commanders, trainers, and Soldiers use this manual with the Soldier's manuals of common tasks (SMCTs) (STP 21-1-SMCT and STP 21-24-SMCT), Army Training and Evaluation Programs (ARTEPs), and Field Manual (FM) 7-1, *Battle Focused Training*, to establish effective training plans and programs that integrate Soldier, leader, and collective tasks.

b. The Army's mission is to mobilize and deploy units trained to accomplish wartime missions. Successful mission accomplishment requires emphasis on individual training. Individual training must focus on performance under the conditions and to the standards expected in wartime. This manual, in conjunction with STP 31-18-SM-TG, identifies the individual MOS training requirements for Soldiers in MOS 18B, SLs 3 and 4. It is designed to be used by commanders, trainers, and Soldiers to plan, conduct, and evaluate individual training in units.

c. Task summaries outline the wartime performance requirements of each critical task in the SM. They give the Soldier and the trainer the information necessary to prepare, conduct, and evaluate critical task training. As a minimum, task summaries include information the Soldier must know and the skills he must perform to standard for each task. These summaries are, in effect, standardized training objectives that ensure Soldiers do not have to relearn a task upon assignment to a new unit.

d. Critical tasks are those that are essential for successful individual skill performance for survival in battle and that require training. The critical tasks for MOS 18B are in Chapter 3 of this manual.

e. Additionally, some task summaries include safety statements and notes. Safety statements (danger, warning, caution) alert users to the possibility of immediate death, personal injury, or damage to equipment. Notes are short, extra supportive explanations relevant to the performance measures.

1-2. Soldier's Responsibilities.

Each Soldier is responsible for performing individual tasks that the first-line supervisor identifies based on the unit's mission-essential task list (METL). The Soldier must perform the task to the standards listed in the SM. If a Soldier has a question about performing a task, or which task in this manual he must perform, he must ask the first-line supervisor for clarification. The first-line supervisor knows how to perform each task or can direct the Soldier to the appropriate training materials.

1-3. Noncommissioned Officer (NCO) Self-Development and the Soldier's Manual.

a. Self-development is one of the key components of the leader development program. It is a planned progressive and sequential program followed by leaders to enhance and sustain their military competencies. It consists of individual study, research, professional reading, practice, and self-assessment. Under the self-development concept, the NCO, as an Army professional, is responsible for remaining current in all phases of the MOS. The SM is the NCO's primary source in maintaining MOS proficiency.

b. Another important resource for NCO self-development is the Army Correspondence Course Program (ACCP). For information on enrolling in this program and for a list of courses, refer to DA Pamphlet (Pam) 350-59, Army Correspondence Course Program Catalog, or log onto the Army Correspondence Course Program at <http://www.atsc.army.mil/accp/AIPD.htm>.

c. Unit learning centers are valuable resources for planning self-development programs. They can help access enlisted career maps, training support products, and extension training materials.

1.4. Training Support.

This manual includes one appendix and provides additional training support information:

- a. Appendix A. Sample of DA Form 5164-R (Hands-On Evaluation) Instructions to the Trainer. This appendix contains a sample DA Form 5164-R that can be used to keep a record of the performance measures. It also provides thorough instructions on how to complete the form.
- b. Glossary. The glossary is a single comprehensive list of acronyms, abbreviations, and definitions.
- c. References. The references are divided into two parts—required and related. Required references are necessary for the Soldier to do the task. These references are listed in the conditions statement and at the end of the task summary. Related references are materials that provide more detailed information and a more thorough explanation of tasks performance. All references are listed at the end of the task.

CHAPTER 2

Training Guide

2-1. General. The MOS Training Plan (MTP) identifies the essential components of a unit training plan for individual training. Units have different training needs and requirements based on differences in environment, location, equipment, dispersion, and similar factors. Therefore, the MTP should be used as a guide for conducting unit training and not a rigid standard. The MTP consists of two parts. Each part is designed to assist the commander in preparing a unit training plan which satisfies integration, cross training, training up, and sustainment training requirements for Soldiers in this MOS.

Part One of the MTP shows the relationship of an MOS skill level between duty position and critical tasks. These critical tasks are grouped by task commonality into subject areas.

Section I lists subject area numbers and titles used throughout the MTP. These subject areas are used to define the training requirements for each duty position within an MOS.

Section II identifies the total training requirement for each duty position within an MOS and provides a recommendation for cross training and train-up/merger training.

- **Duty Position Column.** This column lists the duty positions of the MOS, by skill level, which have different training requirements.
- **Subject Area Column.** This column lists, by numerical key (see Section I), the subject areas a Soldier must be proficient in to perform in that duty position.
- **Cross Train Column.** This column lists the recommended duty position for which Soldiers should be cross trained.
- **Train-up/Merger Column.** This column lists the corresponding duty position for the next higher skill level or MOSC the Soldier will merge into on promotion.

Part Two lists, by general subject areas, the critical tasks to be trained in an MOS and the type of training required (resident, integration, or sustainment).

- **Subject Area Column.** This column lists the subject area number and title in the same order as Section I, Part One of the MTP.
- **Task Number Column.** This column lists the task numbers for all tasks included in the subject area.
- **Title Column.** This column lists the task title for each task in the subject area.
- **Training Location Column.** This column identifies the training location where the task is first trained to Soldier training publications standards. If the task is first trained to standard in the unit, the word "Unit" will be in this column. If the task is first trained to standard in the training base, it will identify, by brevity code (ANCOC, BNCOC, etc.), the resident course where the task was taught. Figure 2-1 contains a list of training locations and their corresponding brevity codes.

SFQC	SPECIAL FORCES QUALIFICATION COURSE
UNIT	Trained in the Unit
IMLC	Infantry Mortar Leader's Course
INSTITUT	Institution
BNCOC	Basic NCO Course

Figure 2-1. Training Locations

- **Sustainment Training Frequency Column.** This column indicates the recommended frequency at which the tasks should be trained to ensure Soldiers maintain task proficiency. Figure 2-2 identifies the frequency codes used in this column.

BA	- Biannually
AN	- Annually
SA	- Semiannually
QT	- Quarterly
MO	- Monthly
BW	- Biweekly
WK	- Weekly

Figure 2-2. Sustainment Training Frequency Codes

- **Sustainment Training Skill Level Column.** This column lists the skill levels of the MOS for which Soldiers must receive sustainment training to ensure they maintain proficiency to Soldier's manual standards.

2-2. Subject Area Codes.**Skill Level 3**

- 1 TACTICS
- 2 FORWARD OBSERVER
- 3 FIRE DIRECTION CENTER (FDC)
- 4 PLOTTING BOARD
- 5 OPERATIONS
- 6 BORESIGHT A 60-MM OR 81-MM MORTAR
- 7 60-MM AND 81MM MORTARS
- 8 LAY A 60-MM OR 81-MM MORTAR
- 9 84-MM CARL GUSTAV RECOILLESS RIFLE(RCLR)
- 10 OPTICS
- 11 AIR DEFENSE SYSTEMS
- 12 PISTOLS
- 13 SUBMACHINE GUNS
- 14 CARBINES, RIFLES, AND SHOTGUNS
- 15 ANTI-TANK WEAPONS
- 16 MACHINE GUNS
- 17 GRENADE LAUNCHER

2-3. Duty Position Training Requirements.

2-4. Critical Tasks List.**MOS TRAINING PLAN
18B34****CRITICAL TASKS**

Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
Skill Level 3				
Subject Area 1. TACTICS				
071-074-0010	Conduct Occupation of a Mortar Firing Position by a Section	SFQC	SA	3-4
071-074-0011	Conduct Occupation of a Mortar Firing Position by a Platoon	SFQC	SA	3-4
071-074-0015	Recommend Employment of Mortars	SFQC	SA	3-4
071-074-0017	Select Mortar Firing Positions	SFQC	SA	3-4
071-074-0022	Conduct a Displacement by a Mortar Squad	SFQC	SA	3-4
071-074-0024	Conduct a Displacement by a Mortar Section	SFQC	SA	3-4
071-074-0026	Conduct a Displacement by a Mortar Platoon	SFQC	SA	3-4
071-074-0029	Conduct a Defense of a Mortar Firing Position by a Section	SFQC	SA	3-4
071-074-0033	Conduct the Defense of a Mortar Firing Position by a Squad	SFQC	SA	3-4
071-326-0518	Camouflage a Mortar Firing Position	SFQC	SA	3-4
071-326-5630	Conduct Movement Techniques by a Platoon	SFQC	SA	3-4
071-331-0820	Analyze Terrain	SFQC	SA	3-4
071-420-0001	Consolidate a Platoon Following Enemy Contact While in the Offense	SFQC	SA	3-4
071-420-0005	Conduct the Maneuver of a Platoon	SFQC	SA	3-4
071-420-0023	Conduct an Attack by a Platoon	SFQC	SA	3-4
071-430-0029	Reorganize a Unit	SFQC	SA	3-4
071-450-0017	Conduct a Raid	SFQC	SA	3-4
071-450-0027	Conduct a Relief	SFQC	SA	3-4
071-450-0030	Conduct a Passage of Lines	SFQC	SA	3-4
071-450-0035	Conduct an Area Ambush by a Platoon	SFQC	SA	3-4
071-450-0036	Conduct an Antiarmor Area Ambush by a Platoon	SFQC	SA	3-4
Subject Area 2. FORWARD OBSERVER				
061-283-1003	Locate a Target by Polar Plot	SFQC	SA	3-4
061-283-1004	Locate a Target by Shift From a Known Point	SFQC	SA	3-4
061-283-1011	Request and Adjust Area Fire	SFQC	SA	3-4
061-283-1013	Conduct a Suppression Mission	SFQC	SA	3-4
061-283-1014	Conduct an Immediate Suppression Mission	SFQC	SA	3-4
061-283-1015	Conduct a Fire for Effect Mission	SFQC	SA	3-4
061-283-1021	Request and Adjust for Coordinated Illumination	SFQC	SA	3-4
061-283-2002	Request and Adjust Final Protective Fires	SFQC	SA	3-4
061-283-2021	Conduct an Immediate Smoke Mission	SFQC	SA	3-4

CRITICAL TASKS

Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
061-283-2023	Conduct a Quick Smoke Mission	SFQC	SA	3-4
061-284-3030	Request Close Air Support (CAS)	SFQC	SA	3-4
071-074-0013	Fire a Ladder Mission	SFQC	SA	3-4
071-321-4014	Talk an Untrained Forward Observer Through a Fire Mission	SFQC	SA	3-4
Subject Area 3. FIRE DIRECTION CENTER (FDC)				
071-076-0002	Record Information on Firing Records	SFQC	SA	3-4
071-076-0003	Record Data Using Meteorological Data Sheet	SFQC	SA	3-4
071-076-0004	Compute Meteorological Firing Corrections	SFQC	SA	3-4
071-076-0008	Apply No-Fire Data to a Plotting Board	SFQC	SA	3-4
071-076-0010	Compute Angle T	SFQC	SA	3-4
071-321-4011	Use Mortar Firing Tables	SFQC	SA	3-4
Subject Area 4. PLOTTING BOARD				
071-078-0001	Prepare a Plotting Board for Operation Using the Pivot-Point Method	SFQC	SA	3-4
071-078-0002	Prepare a Plotting Board for Operation Using the Below Pivot-Point Method	SFQC	SA	3-4
071-078-0003	Compute Re-Registration Corrections Using a Plotting Board	SFQC	SA	3-4
071-078-0004	Compute Data for a Polar Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0005	Compute Data for a Final Protective Fire Using a Plotting Board	SFQC	SA	3-4
071-078-0006	Compute Data for Sheaf Adjustment Using a Plotting Board	SFQC	SA	3-4
071-078-0007	Compute Data for a Traversing and/or Searching Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0008	Compute Data for an Illumination Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0009	Compute Data for a Coordinated Illumination Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0011	Compute Data for a Quick-Smoke Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0012	Compute Data for a Grid Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0013	Compute Data for a Mark-Center-of-Sector Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0016	Compute Data for a Shift Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0017	Compute Data for a Split-Section Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0018	Compute Data for an Immediate-Suppression or Smoke Mission Using a Plotting Board	SFQC	SA	3-4
071-078-0019	Compute Registration Corrections Using a Plotting Board	SFQC	SA	3-4
071-078-0020	Compute Terrain Mortar Positions Using a M16 Plotting Board	SFQC	SA	3-4

Subject Area 5. OPERATIONS				
071-074-0016	Prepare Mortar Fire Plans	SFQC	SA	3-4
071-326-5505	Issue an Oral Operation Order	SFQC	SA	3-4
071-326-5626	Prepare an Oral Operation Order	SFQC	SA	3-4
331-201-2003	Assist in Planning a Field Training Exercise	SFQC	SA	3-4
331-201-2016	Plan for the Use of an Indirect-Fire Range	SFQC	SA	3-4
331-201-2017	Plan for the Use of a Direct-Fire Range	SFQC	SA	3-4
Subject Area 6. BORESIGHT A 60-MM OR 81-MM MORTAR				
071-086-0005	Boresight an M252 81-mm Mortar	SFQC	SA	3-4
071-321-4000	Declinate an M2 Aiming Circle	SFQC	SA	3-4
071-321-4001	Boresight a Mortar for Deflection Using an M2 Aiming Circle	SFQC	SA	3-4
071-321-4002	Boresight a Mortar for Elevation Using an M2 Compass	SFQC	SA	3-4
071-323-4103	Boresight a 60-mm Mortar	SFQC	SA	3-4
Subject Area 7. 60-MM AND 81-MM MORTARS				
071-076-0001	Maintain Fire Control Equipment	SFQC	SA	3-4
071-084-0002	Maintain a 60-mm Mortar	SFQC	SA	3-4
071-084-0003	Perform Misfire Procedures on a 60-mm Mortar While in the Handheld Mode	SFQC	SA	3-4
071-084-0004	Engage Targets With a 60-mm Mortar While Firing in the Handheld Mode	SFQC	SA	3-4
071-086-0002	Maintain an 81-mm Mortar	SFQC	QT	3-4
071-086-0004	Perform Safety Checks on an M252 81-mm Mortar	SFQC	SA	3-4
071-321-3905	Prepare 81-mm Mortar Ammunition for Firing	SFQC	SA	3-4
071-321-4012	Store Mortar Ammunition	SFQC	SA	3-4
071-323-4101	Place a 60-mm Mortar into Action While in the Handheld Mode	SFQC	SA	3-4
071-323-4104	Perform Safety Checks on a 60-mm Mortar	SFQC	SA	3-4
071-323-4106	Prepare 60-mm Mortar Ammunition for Firing	SFQC	SA	3-4
Subject Area 8. LAY A 60-MM OR 81-MM MORTAR				
071-074-0004	Engage Targets With a 60-mm, 81-mm, or 120-mm Mortar Using Direct Lay	SFQC	SA	3-4
071-074-0005	Refer and Realign Aiming Post	SFQC	SA	3-4
071-074-0006	Manipulate a 60-mm, 81-mm, or 120-mm Mortar for Traversing and/or Searching Fire	SFQC	SA	3-4
071-074-0007	Reciprocally Lay an 81-mm Mortar Using an M2 Aiming Circle	SFQC	SA	3-4
071-074-0008	Emplace Aiming Posts	SFQC	SA	3-4
071-074-0036	Adjust Mortar Fire Using Direct Alignment	SFQC	SA	3-4
071-074-0037	Fire a Mortar	SFQC	SA	3-4
071-074-0038	Reciprocally Lay a Mortar Using a Laid Mortar	SFQC	SA	3-4
071-074-0040	Control the Expenditure of Mortar Ammunition	SFQC	SA	3-4
071-074-0042	Lay a Mortar Using Direct Alignment	SFQC	SA	3-4
071-086-0003	Lay an 81-mm Mortar for Deflection and Elevation	SFQC	SA	3-4
071-321-4007	Lay a Carrier-Mounted Mortar Using an M2 Compass	SFQC	SA	3-4

071-321-4009	Lay a Ground-Mounted Mortar Using an M2 Compass	SFQC	SA	3-4
071-323-4102	Lay a 60-mm Mortar for Deflection and Elevation	SFQC	SA	3-4
Subject Area 9. 84-MM CARL GUSTAF RECOILLESS RIFLE(RCLR)				
331-201-2101	Apply Immediate Action to a Carl Gustaf 84-mm Recoilless Rifle (RCLR)	BNCOC	QT	3-4
331-201-2102	Prepare the Carl Gustaf 84-mm Recoilless Rifle (RCLR) for Firing	BNCOC	QT	3-4
331-201-2103	Engage Targets With the Carl Gustaf 84-mm Recoilless Rifle (RCLR)	BNCOC	QT	3-4
331-201-2104	Prepare a Carl Gustaf 84-mm Recoilless Rifle (RCLR) Round for Firing	BNCOC	QT	3-4
331-201-2105	Boresight the Carl Gustaf 84-mm Recoilless Rifle (RCLR)	BNCOC	QT	3-4
331-201-2106	Operate a Carl Gustaf 84-mm Recoilless Rifle (RCLR)	BNCOC	QT	3-4
331-201-2107	Maintain the Carl Gustaf 84-mm Recoilless Rifle (RCLR)	BNCOC	QT	3-4
Subject Area 10. OPTICS				
071-010-0001	Zero a Night Vision Sight AN/PVS-4 to an M249 Machine Gun	SFQC	SA	3-4
071-010-0002	Mount a Night Vision Sight AN/PVS-4 on an M249 Machine Gun	SFQC	SA	3-4
071-010-0003	Dismount a Night Vision Sight AN/PVS-4 from an M249 Machine Gun	SFQC	SA	3-4
071-010-0007	Engage Targets With an M249 Machine Gun Using a Night Vision Sight AN/PVS-4	SFQC	SA	3-4
071-010-0008	Mount an AN/PAS-13 Series Thermal Sight on an M249 Machine Gun	SFQC	SA	3-4
071-010-0009	Dismount an AN/PAS-13 Series Thermal Sight From an M249 Machine Gun	SFQC	SA	3-4
071-010-0010	Zero an AN/PAS-13 Series Thermal Sight to an M249 Machine Gun	SFQC	SA	3-4
071-010-0011	Engage Targets With an M249 Machine Gun Using an AN/PAS-13 Series Thermal Sight	SFQC	SA	3-4
071-010-0012	Mount an AN/PAQ-4 Series Aiming Light on an M249 Machine Gun	SFQC	SA	3-4
071-010-0013	Dismount a Night Vision Sight AN/PAQ-4 From an M249 Machine Gun	SFQC	SA	3-4
071-010-0014	Zero an AN/PAQ-4 Series Aiming Light to an M249 Machine Gun	SFQC	SA	3-4
071-010-0015	Engage Targets With an M249 Machine Gun Using an AN/PAQ-4 Series Aiming Light	SFQC	SA	3-4
071-022-0008	Mount a Night Vision Sight AN/TVS-5 on a Caliber .50 M2 Machine Gun	SFQC	SA	3-4
071-022-0009	Dismount a Night Vision Sight AN/TVS-5 From a Caliber .50 M2 Machine Gun	SFQC	SA	3-4
071-022-0017	Mount an AN/PAS-13 Series Thermal Sight on a Caliber .50 Machine Gun	SFQC	SA	3-4
071-022-0018	Dismount an AN/PAS-13 Series Thermal Sight on a Caliber .50 Machine Gun	SFQC	SA	3-4

071-022-0019	Zero an AN/PAS-13 Series Thermal Sight to a Caliber .50 Machine Gun	SFQC	SA	3-4
071-022-0020	Engage Targets With a Caliber .50 Machine Gun Using an AN/PAS-13 Series Thermal Sight	SFQC	SA	3-4
071-022-0021	Mount an AN/PAQ-4 Series Aiming Light on a Caliber .50 Machine Gun	SFQC	SA	3-4
071-022-0022	Dismount an AN/PAQ-4 Series Aiming Light From a Caliber .50 Machine Gun	SFQC	SA	3-4
071-022-0023	Zero an AN/PAQ-4 Series Aiming Light to a Caliber .50 Machine Gun	SFQC	SA	3-4
071-022-0024	Engage Targets With a Caliber .50 Machine Gun Using an AN/PAQ-4 Series Aiming Light	SFQC	SA	3-4
071-030-0016	Mount a Night Vision Sight AN/TVS-5 on an MK19 Machine Gun	SFQC	SA	3-4
071-030-0017	Dismount a Night Vision Sight AN/TVS-5 From an MK19 Machine Gun	SFQC	SA	3-4
071-030-0018	Zero a Night Vision Sight AN/TVS-5 to an MK19 Machine Gun	SFQC	SA	3-4
071-030-0019	Engage Targets With an MK19 Machine Gun Using a Night Vision Sight AN/TVS-5	SFQC	SA	3-4
071-052-0005	Operate a Night Vision Sight AN/TAS-5	SFQC	SA	3-4
071-100-0009	Mount a Night Vision Sight AN/PVS-4 on an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0010	Dismount a Night Vision Sight AN/PVS-4 From an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0011	Zero a Night Vision Sight AN/PVS-4 to an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0012	Engage Targets With an M4 or M4A1 Carbine Using a Night Vision Sight AN/PVS-4	SFQC	SA	3-4
071-100-0013	Mount an AN/PAS-13 Series Thermal Sight on an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0014	Dismount an AN/PAS-13 Series Thermal Sight From an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0015	Zero an AN/PAS-13 Series Thermal Sight to an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0016	Engage Targets With an M4 or M4A1 Carbine Using an AN/PAS-13 Series Thermal Sight	SFQC	SA	3-4
071-100-0017	Mount an AN/PAQ-4 Series Aiming Light on an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0018	Dismount an AN/PAQ-4 Series Aiming Light From an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0019	Engage Targets With an M4 or M4A1 Carbine Using an AN/PAQ-4 Series Aiming Light	SFQC	SA	3-4
071-100-0020	Zero an AN/PAQ-4 Series Aiming Light to an M4 or M4A1 Carbine	SFQC	SA	3-4
071-315-0056	Engage Targets with a Caliber .50 M2 Machine Gun Using a Night Vision Sight AN/TVS-5	SFQC	SA	3-4
071-315-2317	Zero a Night Vision Sight AN/TVS-5 to a Caliber .50 M2 Machine Gun	SFQC	SA	3-4

071-315-2351	Zero a Night Vision Sight AN/PVS-4 to an M203 Grenade Launcher	SFQC	SA	3-4
071-315-2352	Engage Targets With an M203 Grenade Launcher Using a Night Vision Sight AN/PVS-4	SFQC	SA	3-4
Subject Area 11. AIR DEFENSE SYSTEMS				
441-067-1005	Perform Hangfire/Misfire Procedures on the Stinger Weapon	SFQC	SA	3-4
441-067-1007	Convert a Stinger Missile-Round to a Weapon-Round	SFQC	SA	3-4
441-067-1008	Perform Critical Weapon Checks on the Stinger Weapon	SFQC	SA	3-4
441-067-1009	Perform PMCS on the Stinger Weapon	SFQC	SA	3-4
441-067-1011	Destroy Stinger Weapon to Prevent Enemy Use	SFQC	SA	3-4
441-067-1012	Perform Operator Corrective Maintenance Procedures on the Stinger Weapon	BNCOC	QT	3-4
441-067-1026	Prepare the Stinger Weapon for Firing	SFQC	SA	3-4
Subject Area 12. PISTOLS				
071-004-0002	Perform a Function Check on an M9 Pistol	SFQC	SA	3-4
071-004-0005	Correct Malfunctions of an M9 Pistol	SFQC	SA	3-4
331-201-2204	Engage Targets With a Makarov Pistol	BNCOC	QT	3-4
331-201-2205	Engage Targets With a Browning High Power (BHP) Pistol	BNCOC	QT	3-4
331-201-2220	Maintain a Makarov Pistol	SFQC	SA	3-4
331-201-2221	Maintain a Browning High Power (BHP) Pistol	SFQC	SA	3-4
331-201-2239	Maintain a M1911 Caliber .45 Pistol	SFQC	SA	3-4
331-201-2240	Engage Targets With a Caliber .45 Pistol	SFQC	SA	3-4
Subject Area 13. SUBMACHINE GUNS				
331-201-2201	Engage Targets With a VZ23 Submachine Gun	BNCOC	QT	3-4
331-201-2202	Engage Targets With an M50 Submachine Gun	BNCOC	QT	3-4
331-201-2215	Engage Targets With an MP5 Series Submachine Gun	SFQC	SA	3-4
331-201-2216	Engage Targets With an UZI Submachine Gun	SFQC	SA	3-4
331-201-2218	Maintain a VZ23 Submachine Gun	SFQC	SA	3-4
331-201-2219	Maintain an M50 Submachine Gun	SFQC	SA	3-4
331-201-2231	Maintain an MP5 Series Submachine Gun	BNCOC	QT	3-4
331-201-2232	Maintain an UZI Submachine Gun	BNCOC	QT	3-4
Subject Area 14. CARBINES, RIFLES, AND SHOTGUNS				
071-100-0001	Zero an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0002	Construct Field-Expedient Firing Aids for an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0005	Perform a Function Check on an M4 or M4A1 Carbine	SFQC	SA	3-4
071-100-0008	Correct Malfunctions of an M4 or M4A1 Carbine	SFQC	SA	3-4
331-201-2206	Engage Targets With an SKS Carbine	BNCOC	QT	3-4
331-201-2207	Engage Targets With a G3A4 Rifle	BNCOC	QT	3-4
331-201-2208	Engage Targets With an AK Rifle	BNCOC	QT	3-4
331-201-2213	Engage Targets With an M1200 Shotgun	SFQC	SA	3-4
331-201-2214	Engage Targets With an FN FAL Rifle	SFQC	SA	3-4
331-201-2222	Maintain an SKS Carbine	SFQC	SA	3-4

331-201-2223	Maintain a G3A4 Rifle	SFQC	SA	3-4
331-201-2224	Maintain an FN FAL Rifle	SFQC	SA	3-4
331-201-2225	Maintain an AK Rifle	SFQC	SA	3-4
331-201-2230	Maintain an M1200 Shotgun	BNCOC	QT	3-4
Subject Area 15. ANTI-TANK WEAPONS				
071-054-0003	Perform Misfire Procedures on an M136 Launcher	SFQC	SA	3-4
071-054-0004	Engage Targets With an M136 Launcher	SFQC	SA	3-4
331-201-2233	Maintain a Javelin	SFQC	SA	3-4
331-201-2235	Engage Targets With a Javelin	SFQC	SA	3-4
331-201-2236	React to Javelin Malfunction Indicators	SFQC	SA	3-4
331-201-2237	Restore a Javelin to Carrying Configuration	SFQC	SA	3-4
331-201-2238	Construct a Fighting Position for a Javelin	SFQC	SA	3-4
331-201-2241	Engage Targets With an M72A2/A3 Light Antitank Weapon	BNCOC	QT	3-4
331-201-2242	Perform Misfire Procedures on an M72A2/A3 Light Antitank Weapon	BNCOC	QT	3-4
331-201-2243	Prepare an M72A2/A3 Light Antitank Weapon for Firing	BNCOC	QT	3-4
331-201-2244	Restore an M72A2/A3 Light Antitank Weapon to Carrying Configuration	BNCOC	QT	3-4
Subject Area 16. MACHINE GUNS				
071-022-0005	Correct Malfunctions of a Caliber .50 M2 Machine Gun	SFQC	SA	3-4
071-022-0010	Mount a Caliber .50 M2 Machine Gun on an M3 Tripod	SFQC	SA	3-4
071-022-0011	Dismount a Caliber .50 M2 Machine Gun From an M3 Tripod	SFQC	SA	3-4
071-022-0012	Mount a Caliber .50 M2 Machine Gun on a Vehicle	SFQC	SA	3-4
071-022-0013	Dismount a Caliber .50 M2 Machine Gun From a Vehicle	SFQC	SA	3-4
071-022-0014	Construct a Fighting Position for a Caliber .50 M2 Machine Gun	SFQC	SA	3-4
071-030-0003	Zero an MK19 Machine Gun	SFQC	SA	3-4
071-030-0008	Correct Malfunctions of an MK19 Machine Gun	SFQC	SA	3-4
071-030-0009	Mount an MK19 Machine Gun on a Vehicle	SFQC	SA	3-4
071-030-0010	Dismount an MK19 Machine Gun From a Vehicle	SFQC	SA	3-4
071-030-0011	Mount an MK19 Machine Gun on an M3 Tripod	SFQC	SA	3-4
071-030-0012	Dismount an MK19 Machine From an M3 Tripod	SFQC	SA	3-4
071-030-0013	Construct a Fighting Position for an MK19 Machine Gun	SFQC	SA	3-4
071-312-4004	Lay an M249 Machine Gun Using Field Expedients	SFQC	SA	3-4
071-312-4026	Perform a Function Check on an M249 Machine Gun	SFQC	SA	3-4
071-312-4029	Correct Malfunctions of an M249 Machine Gun	SFQC	SA	3-4
071-312-4030	Zero an M249 Machine Gun	SFQC	SA	3-4
071-313-3452	Zero a Caliber .50 M2 Machine Gun	SFQC	SA	3-4
071-313-3455	Set Headspace and Timing on a Caliber .50 M2 Machine Gun	SFQC	SA	3-4
331-201-2200	Employ an SG43/SGM Heavy Machine Gun	BNCOC	QT	3-4
331-201-2209	Employ a DShK M38/46 Machine Gun	BNCOC	QT	3-4
331-201-2210	Employ an MG3 Machine Gun	BNCOC	QT	3-4
331-201-2212	Employ a PK Machine Gun	BNCOC	QT	3-4

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331-201-2217	Maintain an SG43/SGM Heavy Machine Gun	SFQC	SA	3-4
331-201-2226	Maintain a DShK M38/46 Machine Gun	SFQC	SA	3-4
331-201-2227	Maintain an MG3 Machine Gun	SFQC	SA	3-4
331-201-2229	Maintain a PK Machine Gun	SFQC	SA	3-4
Subject Area 17. GRENADE LAUNCHER				
071-311-2126	Perform a Function Check on an M203 Grenade Launcher	SFQC	SA	3-4
331-201-2110	Engage Targets with an RPG-7	BNCOC	QT	3-4
331-201-2112	Boresight an RPG-7	BNCOC	QT	3-4

CHAPTER 3

MOS/Skill Level Tasks

Skill Level 3

Subject Area 1: TACTICS

Conduct Occupation of a Mortar Firing Position by a Section

071-074-0010

Conditions: Given a mortar section enroute to a designated firing position.

Standards: The section occupied the firing position using the performance steps.

Performance Steps

1. Halt the section short of the objective.
 - a. The section was stopped as close as feasible to the proposed position without violating security, based on mission, enemy, terrain and weather, troops and support available-time available, and civil considerations (METT-TC).
 - b. Coordination was made as to procedures to be followed in movement forward after reconnaissance.
2. Perform reconnaissance.
 - a. The location was determined to meet the criteria for a mortar position; was secure and free of mines, booby traps, and/or other obstacles, which might interfere with mission accomplishment.
3. Secure the position.
 - a. Measures were taken which precluded enemy surprise during occupation.
4. Provide guide(s)/move section into the position.
5. Designate location of section facilities.
 - a. Direction stakes were emplaced; the aiming circle was mounted and prepared to lay the section
 - b. A site was selected for the fire direction center (FDC).
 - c. Tentative wire routes were selected.
 - d. All administrative facility locations were determined (i.e., latrines, access routes, antenna locations, etc.).
6. Lay the section.
7. Establish FDC.
8. Lay wire.
9. Construct mortar positions.
10. Construct fighting positions.
11. Camouflage positions.
12. Designate/construct alternate/supplementary positions.
13. Improve position.

Evaluation Preparation: Setup: At the test site, provide all equipment, personnel, and information given in the task condition statement.

Brief Soldier: Tell the Soldier to supervise the initial emplacement of the mortar, prepare the ammunition, prepare the mortar position, and emplace the mortar in the prepared position.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Halted the section short of the objective.	_____	_____
2. Performed reconnaissance.	_____	_____
3. Secured the position.	_____	_____
4. Provided guide(s)/moved section into the position.	_____	_____
5. Designated location of section facilities.	_____	_____
6. Laid the section.	_____	_____
7. Established FDC.	_____	_____
8. Laid wire.	_____	_____
9. Constructed mortar positions.	_____	_____
10. Constructed fighting positions.	_____	_____
11. Camouflaged positions.	_____	_____
12. Designated/constructed alternate/supplementary positions.	_____	_____
13. Improved position.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 7-90

Conduct Occupation of a Mortar Firing Position by a Platoon
071-074-0011

Conditions: Given a mortar platoon enroute to a designated firing position.

Standards: The platoon occupied the firing position using the performance steps.

Performance Steps

1. Halt the platoon short of the objective.
2. Perform reconnaissance.
3. Secure the position.
4. Provide guide(s)/move platoon into the position.
5. Designate location of section facilities.
6. Lay the platoon.
7. Establish fire direction center (FDC).
8. Lay wire.
9. Construct mortar positions.
10. Construct fighting positions.
11. Camouflage positions.
12. Designate/construct alternate/supplementary positions.
13. Improve position.

Evaluation Preparation: Setup: At the test site, provide all equipment, personnel, and information given in the task condition statement.

Brief Soldier: Tell the Soldier to supervise the initial emplacement of the mortar, prepare the ammunition, prepare the mortar position, and emplace the mortar in the prepared position.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Halted the platoon short of the objective.	_____	_____
2. Performed reconnaissance.	_____	_____
3. Secured the position.	_____	_____
4. Provided guide(s)/moved platoon into the position.	_____	_____
5. Designated location of section facilities.	_____	_____
6. Laid the platoon.	_____	_____
7. Established FDC.	_____	_____
8. Laid wire.	_____	_____
9. Constructed mortar positions.	_____	_____
10. Constructed fighting positions.	_____	_____

Performance Measures

GO

NO GO

11. Camouflaged positions.

12. Designated/constructed alternate/supplementary positions.

13. Improved position.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 7-90

Recommend Employment of Mortars
071-074-0015

Conditions: Given a tactical situation where the unit commander, or his representative, requires recommendations concerning the employment of mortars.

Standards: Recommendations were clear and represented the best possible courses of action. Recommendations were based on the tactical situation (mission, enemy, terrain and weather, troops and support available-time available, and civil considerations [METT-TC]), the section leader's experience, solicited advice of subordinates, and capabilities and limitations of the mortar platoon or section.

Performance Steps

- 1. Analyze mission.
 - a. An analysis was conducted, based on METT-T, which includes issued orders, commander's intent, existing tentative plans, available intelligence, and reconnaissance as possible.
- 2. Make recommendations concerning the following aspects of mortar support:
 - a. Command relationship.
 - b. Priority of fires.
 - c. Priority of targets.
 - d. Types of fires.
 - e. Location/displacement of mortars.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to make recommendations on the employment of mortars.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Analyzed mission.	_____	_____
2. Made recommendations concerning the aspects of mortar support.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	FM 7-90

Select Mortar Firing Positions

071-074-0017

Conditions: As a platoon leader/section sergeant, given an overlay showing all areas of responsibility, a standard 1:50,000-scale military map, compass, radio, and vehicle.

Standards: Within time and tactical constraints, conducted a map reconnaissance and selected at least two possible positions. Conducted a reconnaissance of these positions and selected the best position, based on—

1. Mission.
2. Good cover and concealment and, preferably, a defilade position.
3. Access routes that aid resupply and displacement.
4. Firm ground and drainage.
5. Mask and overhead clearance.
6. Dispersion between squads.

Performance Steps

1. Reconnaissance.
 - a. Selection of mortar positions. Select mortar positions that aid rapid movement of mortars into position, and that ensure close and immediate fire support. The platoon leader/section sergeant must keep informed of the situation and future operations to make timely reconnaissance, selection, and occupation of positions (RSOP). Position areas and routes selected are reported to the company commander (60-millimeter [mm] mortar) or battalion S-3 and fire support officer (FSO) (4.2-inch/81-mm/120-mm mortars).
 - b. Route reconnaissance. Reconnaissance should allow selection of a route that—
 - Leads from the present position to the next position.
 - Permits vehicle movement to the next firing position.
 - Provides as much cover and concealment as possible.
 - Supports the scheme of maneuver.
 - c. Position reconnaissance.
 - (1) Position reconnaissance is a search for firing position sites. Due to range limitations, reconnaissance for new firing positions is continuous. In addition to the primary position, alternate and supplementary positions should be reconnoitered and selected. If time permits, these positions and the routes between them are prepared.
 - (2) The platoon sergeant and section sergeant/chief computer recommend position areas from which they can give the desired fire support.
 - (3) Positions should provide concealment and defilade, space for dispersion, and terrain adaptable for defense of the unit. The position must permit accomplishment of the mission.
 - (4) Normally, positions are well forward in offense. This precludes the need for them to displace early to support advancing attack companies. In defense, positions are normally farther back, which permits continuous fires in support of the battalion reserve if it is committed against an enemy penetration.
 - (5) Due to the depth of the battle area, two squads may be needed initially to support the covering force from one site. When the covering force withdraws, the squads provide cover to another location in the battle area. They can support troops on the forward edge of the battle area (FEBA). When selecting the last location, the minimum range of the mortar must be considered.
 - (6) Mortars can be positioned in small openings in woods, close to the base of hills or bluffs, and in ravines. These areas offer some protection from enemy observation. Mortars may be hand-carried and ground-mounted in positions not accessible to their vehicles.

Performance Steps

- (7) Good mortar positions including:
 - A dry, well-drained ground that is accessible to vehicles and free from obstructions.
 - Alternate positions.
 - Mask and overhead clearance, and room for dispersion.
2. Occupation. The platoon leader/section sergeant must plan for occupying the position to include location of the mortars, vehicle park, wire routes, and security. Sometimes a position is occupied only long enough to adjust on targets. Then the mortars and crews move to a covered and concealed area until a fire mission is required. For this procedure, the baseplates are left in place. In open terrain, the primary position may be selected but not immediately occupied if enemy air is active. Firing data are prepared as completely as possible without registration. Because this procedure slows response to fire requests, it is used only when necessary.
3. Alternate and supplementary positions. The platoon leader/section sergeant selects the location and directs the preparation of alternate and supplementary positions. All members of the platoon must know the routes to these positions. An alternate position is usually occupied only when the primary position becomes untenable. Supplementary positions are usually occupied only after the commander of the supported force approves the move.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task condition statement.

Brief Soldier: Tell the Soldier to use the equipment and materials provided and select/organize mortar platoon/section positions.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Selected defilade positions.	_____	_____
2. Selected firm ground with drainage.	_____	_____
3. Selected an area with mask and overhead clearance.	_____	_____
4. Ensured dispersion between squads.	_____	_____
5. Informed the platoon leader of the positions and routes.	_____	_____
6. Selected alternate and supplementary positions.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 7-90

Conduct a Displacement by a Mortar Squad

071-074-0022

Conditions: Given simulated combat conditions and an operation, fragmentary, or warning order for displacement of a squad.

Standards: Select the best method of displacement of a mortar squad to support the tactical operation.

Performance Steps

1. Mission. To carry out the mortar squad's mission of providing close, immediate fire support, it must displace promptly from one position to another. Good planning and reconnaissance (when possible) reduce the time that weapons are out of action during a displacement. The supported unit's scheme of maneuver influences the time and method of displacement to new positions.
2. Displacement method by squad or section. This method is similar to displacement by sections, except fewer mortars are involved. Displacement is usually employed by platoons or sections with two or three mortars. In two-mortar platoons/sections, displacement means displacing one mortar while the other provides continuous support. In three mortar platoons/sections, one or two mortars remain in place while one or two displace. When the first mortar to displace is in position and ready to fire, the remaining mortar can be displaced. When possible, part of the fire direction center (FDC) is normally sent with the displacing squad, or a squad leader with an M16 plotting board or mortar ballistic computer (MBC) can serve as a temporary FDC. When displacing by section or squad, successive or alternate bounds are used (Figure 1).

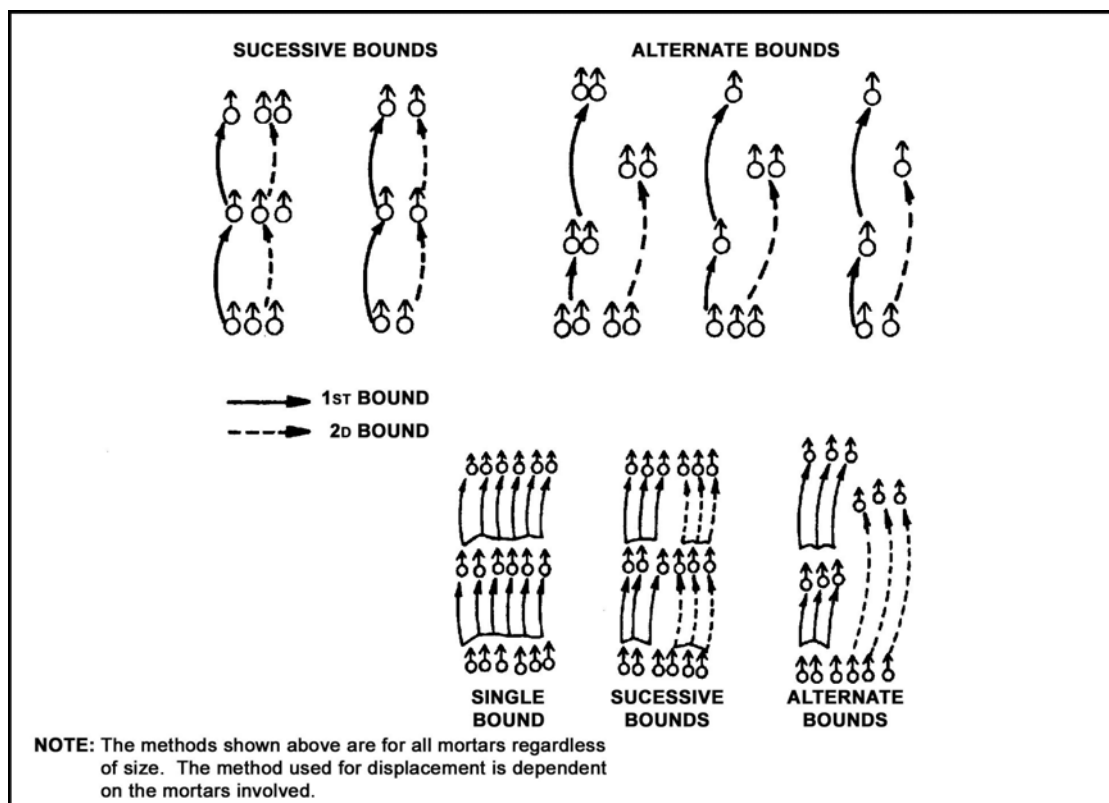


Figure 1. Displacement Methods

Performance Steps**NOTES:**

1. Alternate bounds are used when displacement is rapid in order to stay up with supported elements. Successive bounds are used when the maneuver element's movements are not rapid, such as in defensive or retrograde operations.
2. Displacement by section/platoon should only be used when there is little likelihood of enemy contact, or when supporting artillery units can provide adequate support during displacement.

Evaluation Preparation: Setup: At the test site, provide all equipment, personnel, and information given in the task conditions statement.

Brief Soldier: Tell the Soldier that he is to conduct a displacement using bounding techniques to displace to a new position.

Performance Measures**GO** **NO GO**

1. Use alternate bounding techniques to keep up with supported element.
2. Ensure the displacing squad has means to plot rounds downrange.

_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 7-90

Conduct a Displacement by a Mortar Section

071-074-0024

Conditions: Given simulated combat conditions and an operation, fragmentary, or warning order for a displacement of the mortar section.

Standards: Select the best method of displacement for a mortar section to support the tactical operation.

Performance Steps

1. **Mission.** To carry out its mission of providing close and immediate fire support, the mortar section must displace promptly from one position to another. Good planning and reconnaissance (when possible) reduce the time that weapons are out of action during a displacement. The scheme of maneuver of the supported unit influences the time and method of displacement to new positions.
2. **Displacement by sections.** This method requires one section to remain in position while the other section moves. When the displacing section is in position and ready to fire, the remaining section displaces. Depending on the platoon's organization, each section displaces with a portion of the platoon fire direction center (FDC) or with its organic FDC. Displacing by sections is done when continuous fire support from the mortars is required. Since one section must provide fire support while another section moves, this technique is slower than displacement by platoon. Displacement by sections is the technique most often used by platoons with four or more mortars (Figure 1).

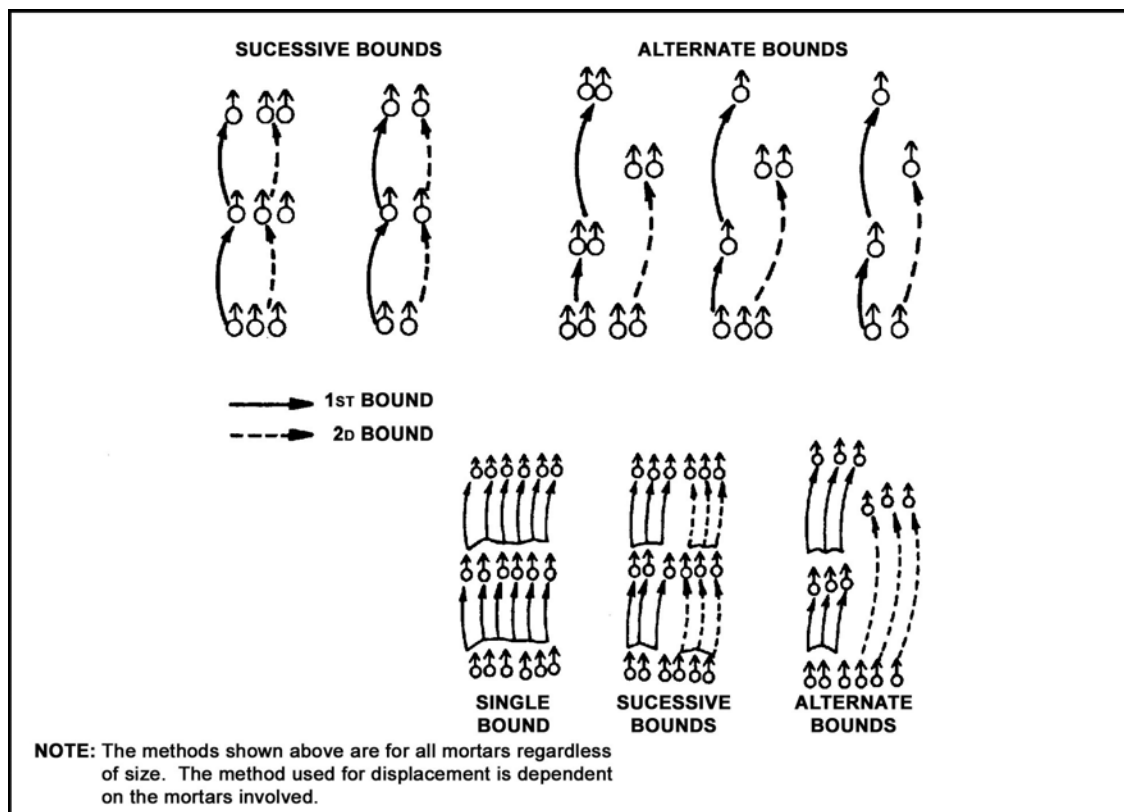


Figure 1. Displacement Methods

Performance Steps**NOTES:**

1. Alternate bounds are used when displacement is rapid in order to stay up with supported elements. Successive bounds are used when the maneuver element's movements are not rapid, such as in defensive or retrograde operations.
2. Displacement by platoon should be used only when there is little likelihood of enemy contact, or when supporting artillery units can provide adequate support during displacement.

Evaluation Preparation: Setup: At the test site, provide all equipment, personnel, and information given in the task conditions statement.

Brief Soldier: Tell the Soldier that he is to conduct a displacement using bounding techniques to displace to a new position.

Performance Measures**GO** **NO GO**

1. Use alternate bounding techniques to keep up with supported element.
2. Section has FDC element when it moves.

_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 7-90

Conduct a Displacement by a Mortar Platoon

071-074-0026

Conditions: Given simulated combat conditions and an operation, fragmentary, or warning order for a displacement of the mortars.

Standards: Select the best method of displacement of mortars to support the tactical operation.

Performance Steps

1. Mission. To carry out its mission of providing close and immediate fire support, the mortar platoon must displace promptly from one position to another. Good planning and reconnaissance (when possible) reduce the time that weapons are out of action during a displacement. The scheme of maneuver of the supported unit influences the time and method of displacement to new positions.
2. Displacement by platoon. The platoon displaces all of its mortars in one move. This is the fastest way to displace the platoon; however, the platoon cannot provide immediate responsive fire support while moving. If it becomes necessary to fire during movement, emergency techniques of engagement are used. Displacement by platoon should be used only when there is little likelihood of enemy contact or when supporting artillery units can provide adequate support during displacement (Figure 1).

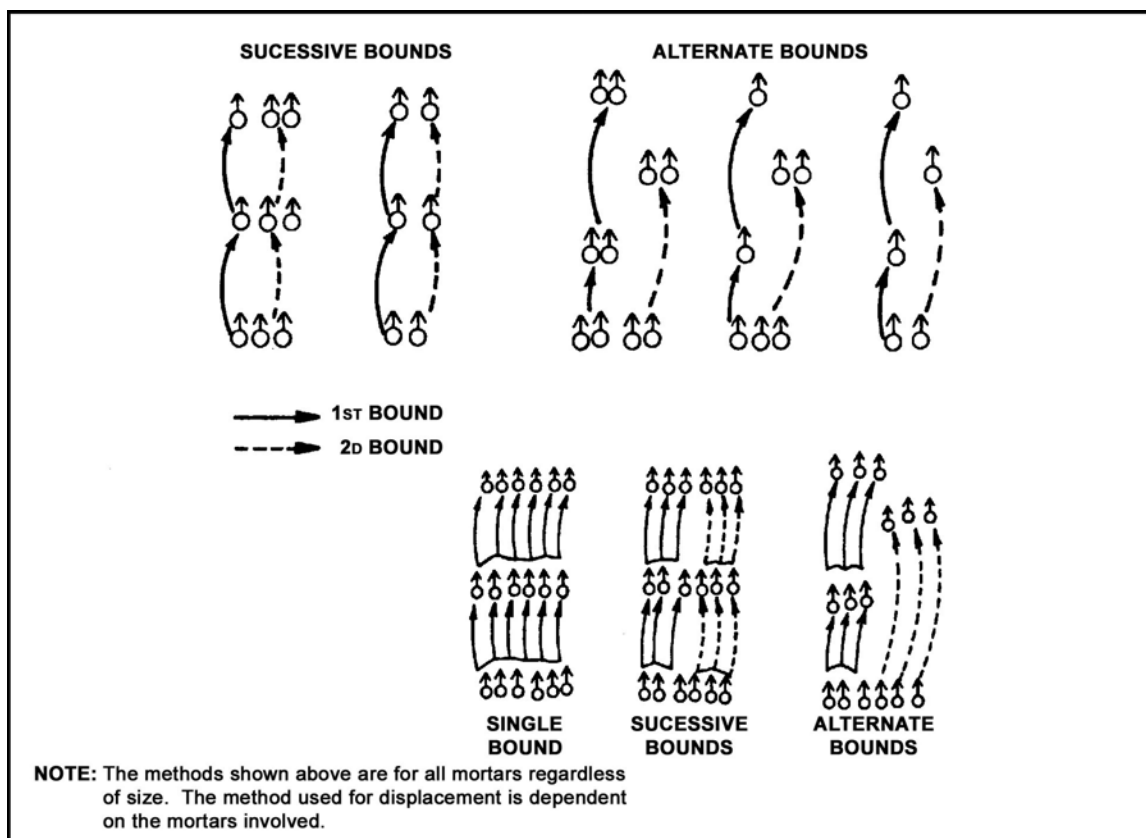


Figure 1. Displacement Methods

Performance Steps

NOTE: Alternate bounds are used when displacement is rapid in order to stay up with supported elements. Successive bounds are used when the maneuver element's movements are not rapid, such as in defensive or retrograde operations.

Evaluation Preparation: Setup: At the test site, provide all equipment, personnel, and information given in the task conditions statement.

Brief Soldier: Tell the Soldier that he is to conduct a displacement using bounding techniques to displace to a new position.

Performance Measures**GO** **NO GO**

1. Use alternate bounding techniques to keep up with supported element.
2. Displace only when enemy contact is very unlikely as a platoon.

_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 7-90

Conduct a Defense of a Mortar Firing Position by a Section

071-074-0029

Conditions: Given a mortar section and an operation or fragmentary order.

Standards: After the section moves into its position, the section must be organized in such a way as to accomplish its mission and provide section security.

Performance Steps

1. Defensive positions for the section and positions for its elements must be where each can best accomplish its mission. Sometimes, positions cannot be near reserve elements, so all mortarmen must be trained to defend their positions against ground and air attack. Organizing for security involves arranging a defensive perimeter that incorporates weapons and vehicles. The section should (when possible) organize its defense with nearby units. Defense measures include camouflage, concealment, dispersion, and preparation of observation posts (OPs) on possible avenues of approach. During a motor march, air guards are designated.
2. After it moves into a position, a mortar squad tactically organizes so that it can efficiently perform its mission. At the same time, the squad must be prepared to defend against enemy attack. All-round security is established, and emplacements are prepared and continuously improved.
 - a. Security begins when the advance party thoroughly searches and inspects an area position. Security ends only after the last of the equipment and mortarmen have safely displaced from the position. At the squad level, security is especially directed to noise and light discipline and continuous observation of the squad's area of responsibility in the section's defense plan. The section leader should plan all-round security and prepare a fire plan for the section's direct-fire weapons.
 - b. When time and situation permit, positions should be constantly improved and result in well-dug-in and fortified areas that are mutually supporting in their defensive fires.
 - c. In mechanized units, the caliber .50 machine gun is a good defensive, antiaircraft weapon. Due to the number of Soldiers in the section, the machine gun should not be dismounted. Each machine gun should be given a principal and an alternate sector of fire. Then range cards must be prepared to ensure adequate coverage is obtained and to ensure left and right limits are understood. With this in mind and knowing the limits of the caliber .50 machine gun being fired from the armored personnel carrier, areas not covered by the machine gun and all areas for the infantry mortars must rely heavily on M16s for direct-fire engagement of the enemy. However, mortar units do not have enough members to take care of all-round coverage of the section's area. The section leader must analyze the terrain and determine the most likely avenues of approach (Figure 1).

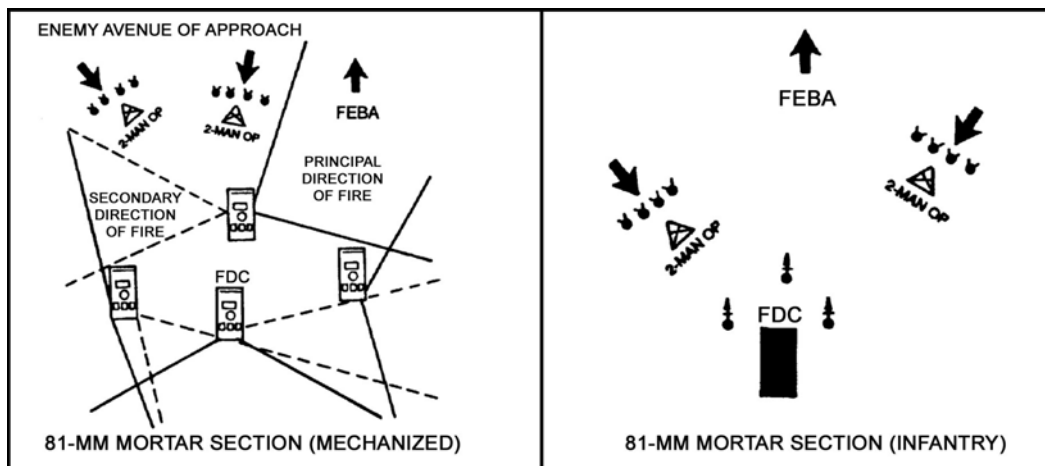


Figure 1. Section Area Avenue of Approach

Performance Steps

- d. It is recommended that one-Soldier or two-Soldier (when possible) OPs be placed on the most likely avenues to block possible enemy penetration and to provide early warning. Due to the rapid movement required of mortars to support friendly troop displacements and to avoid enemy countermortar fire, mortar crews must rely upon other weapons to help in position defense. Barbed wire, though effective, takes considerable time to emplace; therefore, it will not be used often, but it is always planned for.
 - e. The Claymore mine and light antitank weapons are easy to emplace and displace. These weapons should be used to assist in position defense. The number of each may be specified or unit standing operating procedures (SOP). Trip flares and anti-intrusion devices may also be used.
 - f. OPs should be placed in covered and concealed positions to watch likely avenues of approach and to be within effective small-arms range. If the enemy attacks, OPs must be able to warn the unit, so they should have land line or radio communications at their location.
3. A rally point must be selected where forces can be assembled to take what action the platoon leader deems necessary. The defense plan must be rehearsed to be effective.
 - a. The platoon leader/company commander determine the degree to which the section must defend.
 - b. Other elements may be given the mission to help defend the mortars if they are close enough to react quickly.
 - c. Other indirect-fire means may also be asked to assist in the defense or disengagement from an enemy force. Targets must be planned around the mortar position to reduce time in calling for and adjusting fire.
 4. The formations employed by the section (and the area the squads will be assigned in the section defense plan) depend on the situation, mission, terrain, and available security.
 - a. The lazy W formation (Figure 2), which employs the 4.2-inch, 81-mm, and 120-mm mortars on a modified line, provides wide coverage to the front and rear, but poor coverage to the sides. The lazy "W" needs an area at least 150 meters wide and 50 meters deep. It is a good formation for conventional warfare.

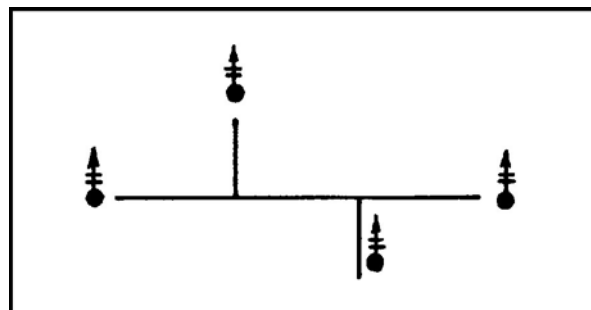


Figure 2. Lazy W Formation

- b. The diamond formation (Figure 3), also used with the 4.2-inch, 81-mm, and 120-mm mortars, is about 100 meters wide and 100 meters deep. From this formation, mortars can fire well in all directions; it is the formation to use in restrictive terrain and where attached or added security is limited (as in a counterinsurgency).

Performance Steps

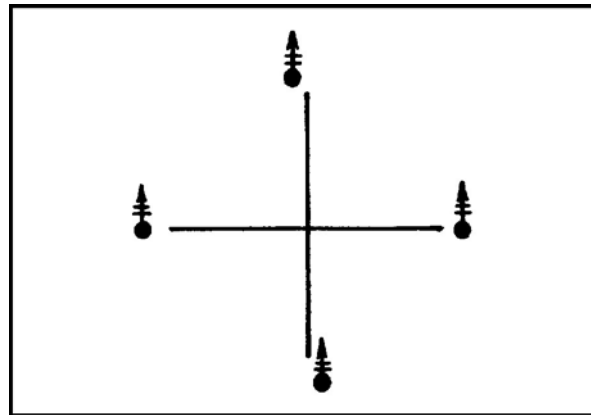


Figure 3. Diamond Formation

- c. The triangle formation (Figure 4) is used with the 4.2-inch and 120-mm mortar sections. The base mortar is about 20 meters forward or to the rear of the other two mortars.

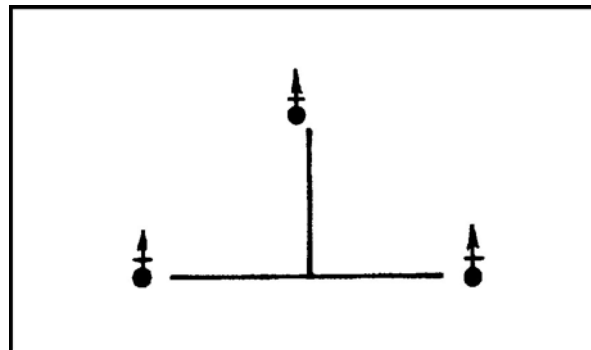


Figure 4. Triangle Formation

NOTE: Since the 60-mm mortar section consists of two mortars, it can be employed in the line formation only.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task conditions statement.

Brief Soldier: Tell the Soldier that, using the equipment and information provided, he must provide for mortar section defense within the specified time given in the fragmentary or operation order.

Performance Measures

1. Use camouflage, concealment, and dispersion measures.
2. Select and inform Soldiers of the rally point location.
3. Give each machine gun a principal and alternate sector of fire.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier scores NO-GO, show what was done wrong and how to do it correctly.

References Required

Related
FM 7-90

Conduct the Defense of a Mortar Firing Position by a Squad

071-074-0033

Conditions: Given a mortar squad position in a combat situation; subject to, or under, attack; with or without assistance of friendly units.

Standards: A plan was developed that included a security plan, priority of work list, location of positions, and sectors of fire for each Soldier (and vehicle, if applicable). The locations took maximum advantage of natural defensive characteristics of the terrain, capabilities of assigned weapons, and the location of mines and early warning devices covered enemy approaches.

Defensive positions were prepared so that:

1. The squad position was covered by fire and/or observation.
2. A final protective line was established. Mines and early warning devices were emplaced to cover enemy approaches and dead space.
3. Fighting positions had cover, concealment, camouflage, clear fields of fire, interlocking fires, and were mutually supporting.
4. Preselected targets were engageable during limited visibility and range cards were prepared for required weapons.
5. Obstacles were used to enhance the defense.

The squad area was defended by:

1. Controlling and directing fires.
2. Movement of personnel as necessary.
3. Control of ammunition and equipment.
4. Reorganization and reestablishment of the defense during lulls.

Performance Steps

1. Develop a defensive plan.
2. Coordinate with adjacent units (if situation provides adjacent friendly troops).
 - a. The integration of mortar fire in local security.
 - b. The location of primary, alternate, and supplementary positions.
 - c. Sectors of fire
 - d. Location of deadspace between units and how to cover it.
 - e. Location of observation posts.
 - f. Location and type of obstacles and how to cover them.
 - g. Patrols to be conducted (size, type, routes, and times).
 - h. Communications information.
 - i. Mission and tentative plans.
3. Supervise preparation for the defense.
4. Implement the defensive plan.

Evaluation Preparation: Setup: At the test site, provide all equipment, personnel and information given in the task condition statement.

Brief Soldier: Tell the Soldier to supervise the initial emplacement of the mortar, preparation of the ammunition, preparation of the mortar position, and emplacement of the mortar in the prepared position.

Performance Measures

1. Developed a defensive plan.

GO **NO GO**

— —

Performance Measures

	<u>GO</u>	<u>NO GO</u>
2. Coordinated with adjacent units (if situation provides adjacent friendly troops).	_____	_____
3. Supervised preparation for the defense.	_____	_____
4. Implemented the defensive plan.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 7-90

Camouflage a Mortar Firing Position

071-326-0518

Conditions: During daylight, in the field with natural camouflage material or lightweight screening system (LSS) with poles, given a ground-mounted mortar firing position or an M106AI or M577 armored carrier and a crew.

Standards: Camouflage the vehicle or the constructed mortar position to prevent ground or air observation, without delaying the operation of the mortar in delivering fire support.

Performance Steps

1. Movement into a mortar firing position.
 - a. While moving into the mortar position, the crew must control movement of tracked or wheeled vehicles to avoid detection and must eliminate track or wheel marks around the position.
 - b. All vehicles should travel over the same route. This prevents the enemy from knowing how many vehicles are present.
 - c. The route taken to the position should follow existing paths, roads, fences, or natural lines in the terrain pattern.
 - d. Exposed routes should not end at the position.
 - e. If only a short part of the route into or around the position is exposed, tree branches should be used to sweep out the tracks.
 - f. Traffic into and out of the mortar position should be minimal.

2. Construction and camouflage of ground-mounted mortar position.

- a. To camouflage a position in grassy terrain—
 - (1) Mark off a circle on the ground the size of the mortar position to include the parapet around the pit.
 - (2) Dig up the sod within this circle and lay it aside.

NOTE: Sod is a section of grass-covered surface soil held together by matted roots; turf.

- (3) Dig in the position using as much of the dirt as needed to build the parapet around the position. Remove the extra dirt from the position and conceal it under trees or bushes or in gullies.
- (4) Use the sod to re-cover the parapet and the sides of the pit. Place grass on the floor of the pit.
- (5) Use small bushes or trees on part of the parapet to break up the outline, but do not use them all around the parapet. This would form a circle easily seen on an aerial photograph. Use larger branches to conceal the mortar within the position.
- b. Grassy terrain camouflage rules usually apply to all terrain; the prepared position must blend with the surrounding terrain.
- c. When camouflaging the position, the crew must be able to quickly place the mortar into operation. Camouflage must not block the view of aiming posts.
- d. The aiming posts and the aiming circle must also be camouflaged if they are to be left in place.

3. Camouflage nets.

- a. When using LSS nets, ensure the coloration blends with the surrounding terrain and vegetation.
- b. With nets as with natural materials, emplace them so they do not interfere with the mortar when firing.
 - (1) When using nets with either the ground-mounted or carrier-mounted mortar, raise the nets above the ground-mounted position or the top of the carrier (Figure 1).
 - (2) To raise the LSS nets, the crew must use poles (Figure 2) or small trees with small branches at the top.

Performance Steps

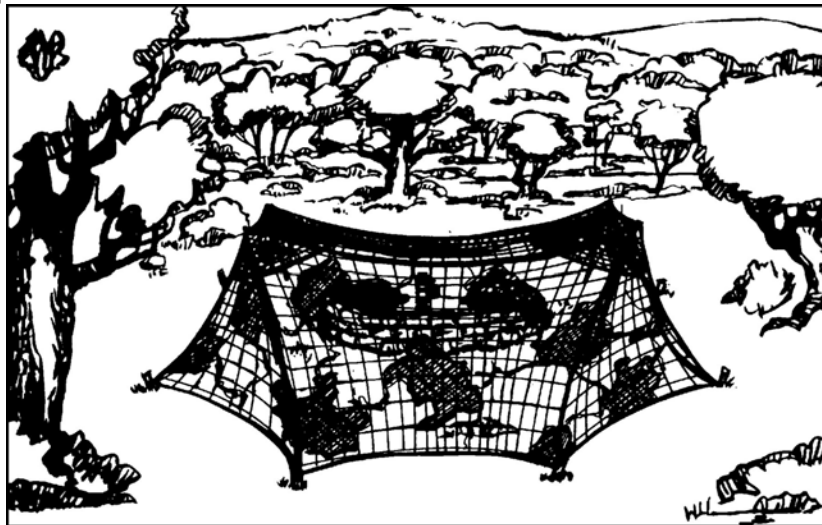


Figure 1. Nets Used for Camouflage

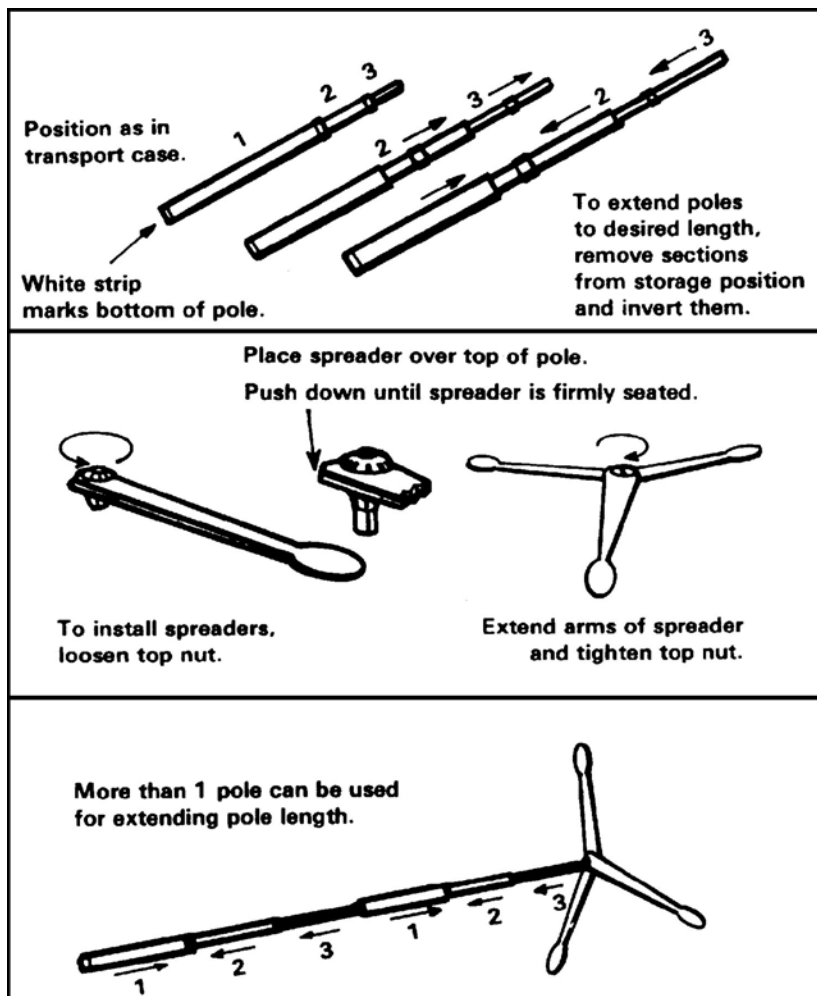


Figure 2. Net Poles and Spreaders

- (3) When using poles or small trees, drape the nets over the mortar position or carrier to

Performance Steps

break up the outline. This is important when the mortars are carrier-mounted.

- (4) In using nets to camouflage the mortar position, set up and secure the side of the net in the direction of fire so that it can be dropped quickly to let the mortar fire.
 - (a) In the ground-mounted or carrier-mounted role, place two poles on the direction-of-fire side of the net just even with or forward of the front edge of the mortar position with the corners staked down (Figure 3). When a fire command is given, two crew members release the net from the stakes. Then, using the two front poles, they lift the net over and lay it behind the mortar (Figure 4).

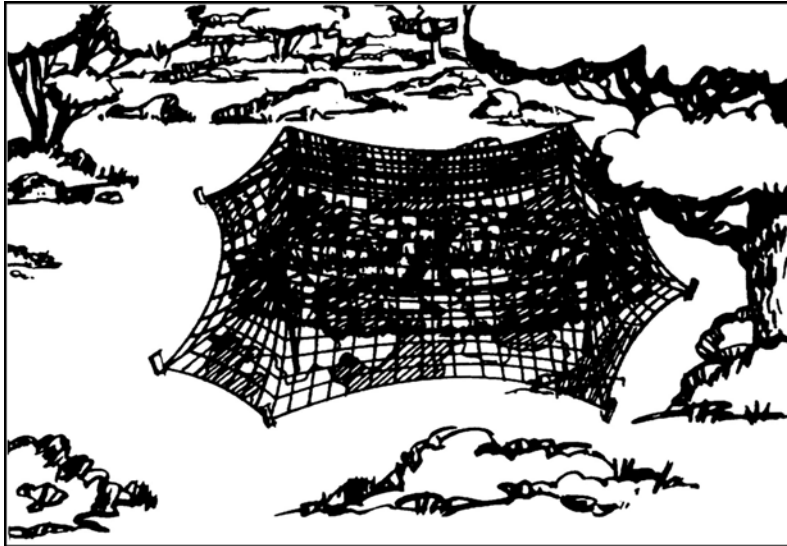


Figure 3. Net With Sides and Corners Staked Down

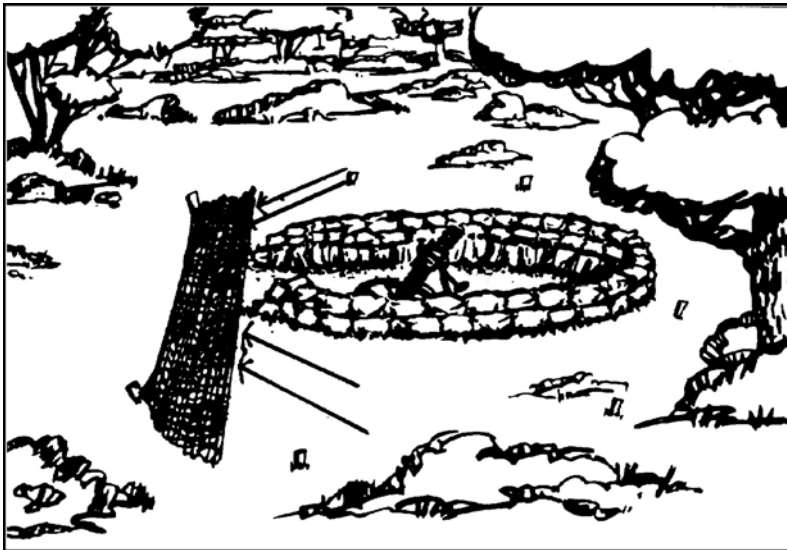


Figure 4. Net Released From Stakes

- (b) When the mission is complete, replace the poles and attach the net corners to the stakes.

Evaluation Preparation: Setup: Test this task during a field training exercise. Provide all equipment, materials, and situation as given in the task conditions statement.

NOTES:

1. Mechanized units are tested on camouflaging both carrier-mounted and ground-mounted positions.
2. Infantry units are tested only on camouflaging ground-mounted positions.

Brief Soldier: Tell the Soldier that as the squad leader, he will be tested on his supervision of the movement into position and the camouflage of the position.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Use correct procedure in moving into the position.	_____	_____
2. Conceal tracks leading into and around the position.	_____	_____
3. Use natural camouflage material to properly camouflage position.	_____	_____
4. Use camouflage nets to properly camouflage position.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References
Required

Related
FM 20-3
FM 21-75

Conduct Movement Techniques by a Platoon

071-326-5630

Conditions: You are directed to conduct a movement to contact. Given a platoon size unit, an operations order (OPORD), a map of the area, an overlay of the area, and control measures, such as phaselines, boundaries, routes, and an axis of advance.

Standards: 1. Complied with control measures (such as the times planned for crossing phaselines) unless or until you contact an enemy force.
 2. Kept at least one squad prepared to maneuver or at least prepared to provide suppressive force.
 3. Controlled movement continuously.
 4. Selected the movement technique based on the likelihood of contact.

Performance Steps

1. Proper use of terrain. Because dismounted Soldiers are vulnerable to all weapons, they can survive and accomplish their mission on the battlefield ONLY if they can operate without being seen. The platoon's best protection is terrain. Maximum use must be made of available cover and concealment at all times, especially when moving against a hidden enemy.
2. Selection of movement technique when not in contact. The platoon adjusts its technique of movement to the likelihood of making contact with the enemy.
 - a. Likelihood of Contact
 - Not Likely
 - Possible
 - Expected
 - b. Movement Technique
 - Traveling
 - Traveling Overwatch
 - Bounding Overwatch
3. Movement techniques.
 - a. Traveling. Use the traveling technique when speed is important and contact with the enemy is not likely. All squads use the traveling technique and move in a column, keeping about 20 meters apart, depending on the terrain and visibility. When the platoon is traveling the platoon leader will normally be behind the lead squad to make control easier. The platoon sergeant normally travels at the head of the trail squad to help the platoon leader control the trail elements of the platoon. A machine gun, a Dragon, or both may move with the platoon sergeant if the platoon leader determines this would provide an advantage.
 - b. Traveling overwatch. Use the traveling overwatch technique when enemy contact is possible, but not expected. In this technique, only the lead squad contacts the enemy, leaving the platoon free to support the lead squad by fire or to maneuver against the enemy. This technique also gives the platoon some time and space in which to react to unexpected enemy fire.
 - (1) The platoon leader increases the distance between the lead squad and the platoon. Terrain and visibility determine the distance. The distance must be short enough to permit visual contact between the lead squad and the platoon, yet great enough that the platoon will not be pinned to down by enemy fire directed at the lead squad. To the extent permitted by terrain and visibility, the platoon lead should strive to maintain a distance of at least 50 meters and preferably 100 meters or more.
 - (2) The lead squad uses the traveling overwatch technique. The platoon leader is normally at the head of the platoon for control and observation. All elements of the platoon use the traveling technique.
 - (3) Crew-served weapons (Dragons and machine guns) may be dispersed throughout the column by attaching them to the platoon sergeant or to trail squads. Regardless of how the platoon is organized, the platoon leader normally retains direct control over at least

Performance Steps

- one machine gun and one Dragon, which travel directly behind him. Placing crew-served weapons in these locations in the column:
- (a) Provides immediate responsiveness to the platoon leader.
 - (b) Lets them better support the lead squad.
 - (c) Ensures that they will not be pinned down by enemy fire directed at the lead squad.
- c. Bounding overwatch. Use the bounding overwatch technique when contact is expected. The basic pattern of this technique is a three-legged walk, with squads rotating the following mission.
- (1) One squad overwatching. One squad covers the advance of the platoon from covered and concealed positions. The positions must offer observation and fire against potential enemy positions. The squad can support the bounding squad by fire immediately if that squad makes contact. The overwatching squad's leader must know:
 - (a) The direction of the enemy threat.
 - (b) The location of his overwatch position.
 - (c) The route and destination of the bounding squad.
 - (d) The location of the platoon leader.
 - (e) The action he can expect to take next.
 - (f) The manner in which he will receive his orders.
 - (2) One squad bounding. One squad moves to a farther position from which it will take overwatch mission, unless it makes contact enroute. This squad should find the enemy. The length of its bound depends on the terrain, the range of the overwatching squad's weapons, and the ability of the platoon leader to control his squads. This squad normally uses the bounding overwatch technique since contact is expected. The bounding squad leader must know:
 - (a) The route and destination of the squad.
 - (b) The movement technique to use (dependent upon speed required).
 - (c) The action to take when he gets to the overwatch position.
 - (d) The location of the overwatching squad and the platoon leader.
 - (e) The action he can expect to take next.
 - (f) The manner in which he will receive his orders.
 - (3) One squad awaiting orders. One squad is committed and available for employment as the platoon leader directs. The squad leader awaiting orders must know how he will receive his orders. He should know:
 - (a) The events that are taking place.
 - (b) The actions he can expect to take next. The platoon leader normally positions crew-served weapons with the overwatch element, along with any fire support team member who is able to call for and adjust indirect fire.

NOTE: The above technique can be varied to fit the situation. A platoon may move the squad awaiting orders to an overwatch position, thus having two squads in overwatch and one squad bounding. Where there is not a suitable squad overwatch position, the platoon leader may have the lead squad use squad bounding overwatch, with the trailing squads using traveling or traveling overwatch.

Evaluation Preparation: Setup: Provide the Soldier with the personnel and equipment listed in the condition statement.

Brief Soldier: Tell the Soldier to lead a platoon-sized element in a movement to contact. Tell him to adhere to the information given in the OPORD and the overlay while maintaining control of the element and using the proper movement techniques to prove security and best use of terrain. During the movement, tell the Soldier the likelihood of contact.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Organized element into squad-sized elements.	—	—
2. Followed the OPORD and overlay.	—	—

Performance Measures

	<u>GO</u>	<u>NO GO</u>
3. Used the proper movement techniques based on the situation, terrain, and visibility.	_____	_____
4. Used the terrain's cover and concealment to the best advantage.	_____	_____
5. Maintained proper position in formation to maintain control.	_____	_____
6. Maintained control throughout the movement.	_____	_____
7. Made proper reports as required by the OPORD.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required**

FM 3-21.71
 FM 3-90.1
 FM 7-7
 FM 7-8

Related

Analyze Terrain

071-331-0820

Conditions: Given any tactical mission that involves a specified route or location on the ground or map, and a standard 1:50,000 scale military map.

Standards: Analyze the route or location in terms of the five military aspects of terrain and determine how each aspect affects the mission.

Performance Steps

NOTE: To help in analyzing terrain, the key word to use is OCOKA; observation and fields of fire, concealment and cover, obstacles, key terrain, and avenues of approach.

1. Observation and fields of fire.
 - a. Observation requires terrain that permits a force to locate the enemy, either visually or through surveillance devices. The best observation generally is obtained from the highest terrain features in an area. The effects of visibility on observation are analyzed with weather rather than terrain, because visibility varies with weather, whereas observation varies with terrain.
 - b. Fire encompasses the influence of the terrain on the effectiveness of direct and indirect fire weapons. The fire of indirect fire weapons is affected primarily by terrain conditions with the target area. Fields of fire for direct fire weapons are primarily affected by terrain conditions between the weapon and target.
 - c. You must identify those terrain features within the adjacent to other the area of operation that affords the friendly or enemy force favorable observation and fire. You must consider them in your subsequent analysis of concealment and cover, key terrain, and enemy forces.
2. Concealment and cover. Concealment is protection from observation; cover is protection from the effects of fire. You must determine the concealment and cover available to both friendly and enemy forces.
 - a. Concealment may be provided by terrain features, vegetation (such as wood, underbrush, or cultivated vegetation), or any other feature that denies observation. Concealment does not necessarily provide cover.
 - b. Cover may be provided by terrain features or manmade features. Areas that provide cover from direct fire may or may not protect against the effects of indirect fire. Most terrain features that offer cover also offer concealment.
3. Obstacles.
 - a. An obstacle is any natural or artificial terrain feature that stops or impedes military movement.
 - b. Consideration of obstacles is influenced by the mission.
 - c. An obstacle may be an advantage or disadvantage and must be considered on its own merits, in view of a specific mission. For example, obstacles perpendicular to a direction of attack favor the defender by slowing or channelizing the attacker. Obstacles parallel to the direction of attack may help protect a flank of the attacking force.
4. Key terrain. A key terrain feature is any point or area whose seizure or control affords a marked advantage to either force. "Seizure" means physical occupation of the terrain by a force, whereas "control" may or may not include physical occupation. The selection of key terrain varies with the level of command, the type of unit, and the mission of the unit.
5. Avenues of approach.
 - a. An avenue of approach is a route for a force of a particular size to reach an objective or key terrain. To be an avenue of approach, a route must be wide enough for the deployment of the size force that will be using it.
 - b. The analysis of an avenue of approach is based solely on the following terrain considerations:
 - (1) Observation and fire. The avenue of approach provides favorable observation and fire for the force moving on it.
 - (2) Concealment and cover. The avenue of approach provides favorable conditions of

Performance Steps

- concealment and cover. This consideration is frequently in conflict with the preceding one.
- (3) Obstacles. The avenue of approach avoids obstacles that are perpendicular to the direction of advance and, whenever practical, takes advantage of those that are parallel to the direction of advance.
 - (4) Use of key terrain.
 - (5) Adequate maneuver space.
 - (6) Ease of movement.

Evaluation Preparation: Setup: Give the Soldier a tactical mission that involves a specified route or location on the ground or map. If only a map is used, issue a standard 1:50,000 scale military map to the Soldier.

Brief Soldier: Tell the Soldier he must analyze the route or location in terms of the five military aspects of terrain and determine how each aspect affects the mission.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Identified effects of terrain on observation and fire.	—	—
2. Identified concealment and cover along route or at position.	—	—
3. Identified obstacles that would be an advantage and a disadvantage along route or at position.	—	—
4. Identified key terrain along route or at position.	—	—
5. Identified the best avenue of approach.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any steps are failed. If the Soldier scores NO-GO, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 3-25.26

Consolidate a Platoon Following Enemy Contact While in the Offense **071-420-0001**

Conditions: In a combat situation, given a platoon in the offense that has made contact with the enemy.

Standards: The platoon occupies attack order designated positions, establishes local security and mutual support between squad and adjacent platoons, eliminates any enemy resistance and secures prisoners, designates rifle team positions.

Performance Steps

1. Consolidation in the offense is the organizing and strengthening of a newly captured position to secure it against a counterattack.
2. Eliminates any resistance and secures prisoners of war.
3. Establishes local security and mutual support.
 - c. Keep pressure on the withdrawing enemy with continuous indirect fire on his last known or suspected positions or rally points.
 - d. Positions should be prepared as necessary to repel counterattack and increase survivability against indirect fires.
4. Remans key weapon.
5. Provides first aid and prepares wounded Soldiers for medical evacuation (MEDEVAC).
6. Redistributes ammunition.

NOTE: Consolidation consists of actions taken to secure an area.

Evaluation Preparation: Setup: Provide the leader with all material and information given in the task conditions statement.

Brief Soldier: Tell the leader he must plan the required consolidation and include his plan in his order to the squad leaders.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Eliminated any resistance and secured any prisoners.	_____	_____
2. Established local security and mutual support.	_____	_____
3. Place out the observation posts (OPs).	_____	_____
4. Remanned any crew served weapons.	_____	_____
5. Provided first aid and prepared any wounded Soldiers for MEDEVAC.	_____	_____
6. Redistributed ammunition.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P) Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References **Required**

Related
 FM 3-21.71
 FM 7-7
 FM 7-8
 STP 7-11BCHM1-SM

Conduct the Maneuver of a Platoon

071-420-0005

Conditions: As the leader of a platoon conducting a movement to contact, the platoon encounters an enemy position.

Standards: 1. Determine the strength and disposition of the enemy.
2. Fix him with all available suppressive fire.
3. Assault flank, rear, or other weak points, using fire and movement, all organic and supporting weapons, and all available cover and concealment.

Performance Steps

1. Develop the situation. When the lead platoon makes contact with the enemy, develop the situation. Try to gain knowledge about the enemy's strengths, weaknesses, and disposition that was not learned from the initial contact. Exploit weak points aggressively. Use all available fire support, cover, and concealment to maintain forward momentum.
2. Take action on contact.
 - a. Using the proper movement techniques, one squad in the platoon should make contact. This leaves the rest of the platoon free to support the squad in contact, which tries to fight through the enemy. To do so, the squad uses fire and movement. Members of the squad move singly, in buddy teams, or in fire teams, depending on the terrain and enemy situation. Soldiers fire and move completely through the enemy position if possible, making short rushes (three to five seconds long) from one covered position to the next, minimizing their exposure.
 - b. Even if the squad cannot overcome the enemy, its effort to do so gives the platoon leader information on the enemy's strength and disposition. He fights through at the platoon level by moving one or two squads forward under the overwatching fire of his remaining squad(s), his key weapons, and all the fire support he can get through his forward observer and his company commander.
 - c. As the platoon maneuvers against the enemy, its leader continuously reports to the company commander. If a platoon cannot overcome the resistance, it may become an overwatch element for a continuation of the attack by the entire company or take other action directed by the company commander.
 - d. Included in the platoon leader's orders (by example or direct contact) may be instructions for:
 - (1) The lead squad to either maneuver against the enemy resistance, supported by other elements of the platoon, or to hold in position and overwatch.
 - (2) The leaders of the other squads to either overwatch the lead squad or to move along a specified route, deploy in an assault position the platoon leader selects, and assault on the platoon leader's signal.
 - (3) The forward observer of the fire support team to get all the indirect fire he can on the enemy position (objective) and on nearby positions from which the enemy can shoot at the platoon as it attacks, and to shift that fire to adjacent positions as the platoon advances.
3. Prepare reports. Make frequent reports of the platoon's progress to the company commander. Make them accurately and in time to be useful.
4. Assault.
 - a. The assault is the final move toward the enemy under fire. The purpose of the assault is to destroy the enemy position. The assault is characterized by noise and confusion. A successful assault is usually due to the actions of men or teams who exploit terrain and enemy weaknesses in their immediate areas.
 - b. As the platoon deploys and moves through the assault position, supporting fire should increase to its greatest rate. Machine guns may be deployed near the assault position to provide continuous supporting fire. As elements of the platoon close with the enemy, they may alternate as overwatch and assault elements.

Performance Steps

- c. Assaulting troops should move as close to supporting fire as possible. As fire is shifted, men in the assaulting element deliver intense small-arms fire, throw hand grenades, and close with and kill the enemy. The assault continues until the enemy resistance is destroyed.
 - d. To close with the enemy, the overwatch element must suppress the enemy fire. This is done by blocking the enemy's vision with smoke or by shooting at him with enough accurate fire to drive him from his firing positions. The enemy will probably continue to fire, but his fires will be inaccurate and ineffective.
 - e. The assaulting troops avoid or move quickly through unsuppressed enemy fire. When the enemy fire is suppressed, they can move toward enemy positions without taking excessive casualties.
 - f. The assaulting element seeks to concentrate against the enemy flank, rear, or other weak points. The enemy may try to reinforce those points; use fire to fix him so that he cannot. Smoke and direct fire may suppress the enemy, but it will not keep him from redeploying along interconnecting trenches. To stop this movement, airburst indirect fires are required. Remember that the enemy must be fixed by suppressive fire.
5. Fight in restrictive terrain.
- a. In very rugged terrain and in areas heavily fortified or with a lot of obstacles, the fire of the platoon may be severely restricted.
 - b. In restrictive terrain, the platoon may organize squads into:
 - (1) An assault element, to close with and destroy the enemy.
 - (2) An overwatch element, to suppress and fix the enemy by fire.
 - (3) A breaching element (when required), to clear or mark a path through enemy obstacles for the assault element.
 - c. Enemy positions may be in trenches, buildings, or fortified bunkers. Most restrictive areas require the same general techniques:
 - (1) Organize into assault, overwatch, and (if necessary) breaching elements.
 - (2) Maintain control by seizing one objective at a time.
 - (3) After seizing an objective, secure it with an element and continue the assault with the rest of the platoon.
6. Perform common tasks. Three of the most common tasks that face the platoon in restrictive terrain are to clear a trench system, knock out bunkers, and clear buildings.
- a. Clearing a trench system:
 - (1) Trench systems allow the defender to move his troops from one defensive position to another. A system usually has two or more main trenches with connecting secondary trenches. Each trench is narrow and has fighting positions or bunkers constructed at intervals along it.
 - (2) Because one trench supports another, the enemy can continue to fire on the assault element even after the element has secured one trench in a system.
 - (3) The platoon normally assaults a trench while part of a larger force; its objective is a specific section or point in the trench. The platoon leader assigns these tasks:
 - (a) Penetrate the trench system.
 - (b) Hold the initial trench.
 - (c) Clear the trench system.
 - (4) In the assault of a trench:
 - (a) Key weapons should be used against the fighting positions and bunkers to destroy and suppress the enemy's fire.
 - (b) Grenade launchers should be fired into the trench during the assault.
 - (c) Hand grenades should be used before and after entering the trench to clear enemy positions.
 - (5) When the platoon enters the trench, one element should secure the penetrated point. That element covers the rear while two- or three-man buddy teams clear the trench. They clear it—
 - (a) In only one direction.

Performance Steps

- (b) Along the main trench, leaving an element to hold each connecting trench.
 - (c) Only as much as the unit can hold against counterattack.
- (6) Each bunker in a trench system must be cleared in succession.
- b. Knocking out bunkers:
 - (1) The enemy also uses bunkers in built-up areas in conjunction with buildings and trenches. The techniques for clearing bunkers and buildings are the same. The assault of a bunker in a trench system and the assault of a bunker in a fortified area are the same.
 - (2) Whenever possible, use artillery or airstrikes to destroy bunkers. When available, the combat engineer vehicle can neutralize fortified positions and bunkers. When the platoon must assault a bunker:
 - (a) Approach it from its blind side.
 - (b) Have part of the platoon shoot into the entrance, ports, and other openings, while the rest of the platoon closes on it with grenades, flame weapons, or demolitions to destroy it.
- c. Clearing buildings:
 - (1) Farm complexes, villages, industrial sites, cities, and other built-up areas may become objectives. The rifle platoon may have the mission of seizing a farm complex or a section of buildings in a larger built-up area.
 - (2) Plans to clear buildings will provide for:
 - (a) Organizing the platoon into an assault element(s), overwatch element(s), and breaching element(s) (as required).
 - (b) Isolating the objective by using all available direct and indirect fire.
 - (c) Seizing a foothold or entry into the building(s).
 - (d) Clearing the building(s) in the objective.
 - (3) For the attack, the assault element, the overwatch element, and if necessary the breach element should be used.
 - (4) The assault element, consisting of riflemen and demolition men:
 - (a) Assaults to gain a foothold in the building(s).
 - (b) Clears the building(s) in the objective area.
 - (5) The overwatch element, consisting of automatic riflemen, grenadiers, machine guns, fighting vehicles, and attached tanks and other direct fire weapons:
 - (a) Shoots suppressive fire for the assault element.
 - (b) Secures cleared parts of the building(s).
 - (c) Reinforces the assault element as necessary.
 - (6) To clear a building:
 - (a) Enter at the highest point possible. Use ladders, drainpipes, vines, or grappling hooks.
 - (b) Use fighting vehicles for movement between buildings. Movement may be from roof to roof when buildings are close together.
 - (c) When enemy fire prevents entry at upper levels, create new entrances with tanks, fighting vehicles, demolitions, or antiarmor weapons.
 - (d) Do not enter by a door or a window unless you can fire heavy weapons into it to destroy any mines and kill any enemy infantry.
 - (e) Work from the top of the building to the bottom. Even when a building must be entered on the ground floor, proceed to the top and clear down.
 - (f) Use two- or three-man buddy teams to clear rooms and hallways.
 - (g) The breaching force must breach obstacles or use demolitions to open entry points in buildings for the assault element.
 - (h) To clear a room, one man throws a grenade into it, waits for the explosion, and enters the room. A second man enters and, covered by the first, searches the room. When you can't use the doorway, create a new door by blowing a hole in the wall with demolitions.
 - (i) If movement is restricted to the ground move from one doorway to another, always hugging walls or any other available structure. Avoid crossing open streets, alleys, and vacant lots; crawl under windows; and be careful when crossing in front of doors.

Evaluation Preparation: Setup: This task should be evaluated during a field training exercise. Provide the Soldiers with the equipment, information, and personnel given in the task condition statement.

Brief Soldier: Tell the platoon that they are to conduct a movement to contact.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Developed the situation.	_____	_____
2. Took action on contact.	_____	_____
3. Prepared reports.	_____	_____
4. Assaulted.	_____	_____
5. Fought in restrictive terrain.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
 FM 3-21.71
 FM 7-7
 FM 7-8

Related

Conduct an Attack by a Platoon

071-420-0023

Conditions: In a combat environment, given a platoon whose company has received an order to attack.

Standards: 1. Developed a plan that included objectives, missions for each squad, squad routes along the direction or main route of attack, key terrain, fire support, formations, and other required control measures.

2. Supervised preparations including the cleaning and test-firing of weapons, maintenance of weapons and equipment, ammunition resupply or needed equipment, and Soldiers rest. Rehearsed for the mission.

3. Destroyed or captured the enemy force and seized the platoon objective.

Performance Steps

1. Receive and analyze the mission.

2. Make a tentative plan.

3. Start preparations.

NOTE: As a minimum, a map reconnaissance must be conducted. Time and the situation permitting, a ground reconnaissance should be conducted.

4. Conduct a reconnaissance.

5. Prepare the final plan and issue an operations order.

6. Continue preparations.

7. Request supplies.

8. Conduct rehearsals.

9. Conduct final inspection.

10. Control movement to the objective area.

11. Occupy the overwatch position with Bradley fighting vehicles (BFVs).

12. Control organic fires.

13. Conduct dismounted movement.

14. Conduct the breach.

15. Conduct the assault.

Evaluation Preparation: Setup: At the test site, provide an area in which an attack can be conducted. Test this task during a platoon or larger tactical exercise.

Brief Soldier: Tell the Soldier that he is the leader of a platoon conducting an attack.

Performance Measures

GO **NO GO**

1. Planned the attack in accordance with (IAW) mission, enemy, terrain and weather, troops and support available-time available, and civil considerations (METT-TC).

a. Identified the mission for each squad.

b. Identified fire support requirements.

Performance Measures	<u>GO</u>	<u>NO GO</u>
2. Supervised the mission preparations. Ensured Soldiers maintained equipment and weapons. Ensured supplies were received and distributed. Conducted rehearsals and inspections.	_____	_____
3. Controlled the attack. Controlled the organic weapons fires. Issued fragmentary orders (FRAG orders) as the situation developed.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 7-8

Reorganize a Unit
071-430-0029

Conditions: Given a squad leader with squad, or platoon sergeant with platoon, or mortar section sergeant, or acting platoon leader defending as part of a larger unit; your element has just repelled an enemy assault.

Standards: Reorganized the unit (squad, platoon, or mortar section) in the defense following enemy contact.

Performance Steps

1. The platoon leader must plan the required reorganization of the platoon while defending (either deliberate or hasty). He must include his plan in the order to the squad leaders. The plan must be tentative and flexible and may be changed as the situation evolves. The leader's plan must be complete and detailed as possible.
2. Reorganize a unit:
 - a. Reestablish the chain of command; fill all key positions from the remaining element members and ensure the new chain of command is disseminated down to the last member of your element.
 - b. Evacuate the dead and seriously wounded according to your casualty evacuation plan; ensure all positions and sectors remain mutually supporting; check all sectors of fire after all casualties are evacuated to ensure all sectors are covered; If necessary, shift positions or reassign sectors to cover any gaps in your sector.
 - c. Redistribute or resupply ammunition, weapons, and fuel; ensure the squad leaders pass out additional ammunition (if available), or divide the remainder equally throughout the squad or platoon; conduct a quick inventory and submit a supply request to higher if necessary.
 - d. Ensure all enemy prisoners of war (EPWs), enemy material, and enemy information are collected, reported, and evacuated. (if possible)
 - e. Ensure all crew-served weapons are manned and positioned on likely avenues of approach.
 - f. Issue to higher, a LACE report to include:
 - (1) L - Liquid, how much water each Soldier has left (canteens per).
 - (2) A - Ammunition, how much ammunition does the squad or platoon have per man (after redistribution).
 - (3) C - Casualties, how many casualties did the squad or platoon encounter.
 - (4) E - Equipment, how much special equipment does the squad and platoon have remaining.
3. For mortar section:
 - a. Reestablish section communications.
 - b. Reestablish the fire direction center (FDC).

Evaluation Preparation: Setup: Provide a squad or platoon in an established defensive position, simulated casualties, simulated EPWs, simulated destroyed crew-served weapons, blank ammunition, and a communication network.

Brief Soldiers: This task should be conducted and evaluated in a realistic field environment using a realistic combat scenario.

Performance Measures

1. Reestablished and disseminated the chain of command.
2. Evacuated the dead and seriously wounded.
3. Ensured all positions remained mutually supporting.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Performance Measures	<u>GO</u>	<u>NO GO</u>
4. Checked sectors of fire.	_____	_____
5. Redistributed or resupplied ammunition, weapons, and fuel, if needed.	_____	_____
6. Ensured squad leaders and platoon sergeants passed out additional ammunition, if available.	_____	_____
7. Ensured all EPWs were reported and evacuated as soon as possible (ASAP).	_____	_____
8. Ensured all crew-served weapons are manned.	_____	_____
9. Issued a LACE report to higher.	_____	_____
10. Reestablished section communications (mortar section).	_____	_____
11. Reestablished the FDC (mortar section).	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
FM 7-8

Related
FM 23-90
FM 3-21.71
FM 7-10
FM 7-7

Conduct a Raid

071-450-0017

Conditions: In a combat environment, given a unit, and a mission to conduct a raid.

Standards: Planned the mission, including organization and preparation, routes, movement techniques, actions on contact, actions on the objective, and withdrawal and re-entry of friendly lines.

Supervised the preparations, including the cleaning and test-firing of weapons, maintenance of weapons and equipment, required resupply, rehearsals, and inspections.

Controlled the raid, accomplishing one of following criteria: destroyed an objective, captured troops or equipment, or freed friendly personnel.

Performance Steps

1. Analyze the mission.
2. If time permits, issue a warning order to provide subordinate elements with as much preparation time as possible.
3. Make a tentative plan.
4. Reconnoiter on the ground, if you can. If not, conduct a map reconnaissance.
5. Supervise preparations.
 - a. Complete or revise the plan.
 - b. Order and distribute mission specific equipment and supplies.
 - c. Issue the operations order (OPORD) at the time and place designated in the warning order.
 - d. Rehearse.
 - e. Conduct final inspections.
6. Conduct the raid.
 - a. Issue fragmentary orders.
 - b. Control fires as the situation develops.
 - c. Depart through friendly lines.
 - d. Confirm rally points.
 - e. Cross danger areas.
 - f. Occupy objective rally point (ORP).
 - g. Execute the raid.
 - h. Reenter friendly lines.

Evaluation Preparation: Setup: At a test site where the unit can conduct a raid, provide all materials and personnel given in the task condition statement.

Brief Soldier: Tell the Soldier to lead a raid based on the raid plan provided.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Analyzed the mission.	_____	_____
2. Issued a warning order.	_____	_____
3. Made tentative plan.	_____	_____
4. Reconnoitered.	_____	_____
5. Supervised preparations.	_____	_____

Performance Measures

GO

NO GO

6. Conducted the raid.

Evaluation Guidance: Score the Soldier a GO if all performance measures are passed. Score the Soldier a NO-GO if any performance measure is failed. If the Soldier scores a NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 7-8

Conduct a Relief

071-450-0027

Conditions: In a tactical environment, as the acting platoon leader in a Bradley fighting vehicle (BFV) platoon, given a mission to conduct a relief as part of the company.

Standards: The platoon's specified and implied task received and analyzed from the company's operation order is accomplished. A warning order is issued to start initial preparation and movement.

Performance Steps

1. The plan for the relief considers the subsequent mission for both the relieved and relieving platoon.
2. Detailed planning is executed concerning the time required to conduct the relief.
3. The plan allows for both a daylight and night reconnaissance so that all leaders are able to identify positions, routes, and assembly areas.
4. Planning considered as a minimum:
 - a. Times for starting and completing the platoon's routes.
 - b. Routes, guides, and assembly areas for each squad/section.
 - c. Critical control measures (that is, signals, contact points, checkpoints).
 - d. Sequence of squad/section relief.
 - e. Maximum use of limited visibility.
 - f. Adjustment for dissimilarities in unit equipment.
 - g. Provisions to maintain unit and tactical integrity.
 - h. When change of sector responsibility would occur.
 - i. Assembly areas and appropriate of guides.
5. Supervision for the relief included rehearsal of all approved phases of the plan when time, troop availability, and tactical situation allowed.

Evaluation Preparation: Setup: This task will be evaluated during the conduct of a platoon or larger tactical exercise. The fire team or BFV section will maneuver as part of the platoon or larger element conducting a movement to contact or deliberate relief in place.

Brief Soldier: Tell the Soldier that he is the platoon leader moving as part of a larger element of the company. Upon contact the Soldier must maneuver the platoon/section and conduct a deliberate relief in place.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Conducts movement minimizing use of checkpoints and without massing troops.	—	—
2. Exchanges current enemy information between leaders.	—	—
3. Accomplishes communications security through the use of wire.	—	—
4. Exchanges range cards, target lists, and sector sketches with the incoming squad/section and platoon leaders.	—	—
5. Transfers key weapons where identified and coordinated.	—	—
6. Coordinates and transfers all classes of supplies.	—	—
7. Accomplishes and coordinates responsibility for sector as planned.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

STP 31-18B34-SM-TG

**References
Required**

Related
FM 3-90.1
FM 7-20

Conduct a Passage of Lines

071-450-0030

Conditions: In a combat environment, given a platoon and a mission requiring a passage of lines.

Standards: Identified routes to assembly area, occupied the assembly area, contacted the friendly unit, exchanged recognition signals, linked up with guides, moved through the friendly lines and obstacles.

Performance Steps

1. Occupy the assembly area (or initial rally point). Contact the forward unit.
2. Coordinate the passage of lines with the forward unit commander or with a designated representative.
 - a. Provide the stationary unit with the passing unit's-
 - (1) Identification and size.
 - (2) Departure and return times.
 - (3) Area of operation.
 - (4) Any other special information.
 - b. Obtain information about the current situation, to include-
 - (1) Known or suspected enemy locations.
 - (2) Likely enemy ambush sites.
 - (3) Latest enemy activity.
 - (4) Detailed location information of all nearby friendly forces.
 - (5) Obstacle locations.
 - (6) Fire plan.
 - (7) Friendly support available.
 - (8) Signal operating instructions (SOI).
 - (9) Locations of contact and passage points.
 - (10) Primary and alternate routes.
 - (11) Contingency plans.
 - (12) Guides (if needed).
3. Control the passage of lines.
 - a. Move to initial rally point, if required. Conduct final coordination with forward commander and guide (if any).
 - b. Move the unit to a covered and concealed position near the passage point.
 - c. When necessary, have the security team clear the area forward of the passage point to the first covered and concealed position. Signal the unit.
 - d. Move unit to passage point.
 - e. Guide is told how long to wait at release point and running password is confirmed.
 - f. Make a security halt beyond friendly units direct fire support.

Evaluation Preparation: Setup: At the test site, provide the materials and information according to the task condition statement.

Brief Soldier: Tell the Soldier to identify routes to the assembly area, occupy the assembly area, contact the friendly unit, and link up with guides.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Occupied assembly area (or initial rally point). Contacted forward unit.	—	—
2. Coordinated with the forward unit.	—	—
3. Controlled the passage of lines.	—	—
a. Moved unit to covered and concealed position near the passage point.		

Performance Measures

GO **NO GO**

- b. Ensured that security team cleared and secured the first covered and concealed position forward of the passage point.
- c. Moved the unit through the passage point.
- d. Made a security halt.

Evaluation Guidance: Score the Soldier a GO if all performance measures are passed. Score the Soldier a NO-GO if any performance measure is failed. If the Soldier scores a NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

ARTEP 7-8-MTP
FM 3-21.71
FM 7-20

Conduct an Area Ambush by a Platoon

071-450-0035

Conditions: Given a combat environment, a platoon with table of organization and equipment (TOE) equipment, weapons and ammunition, attached weapons and personnel as required, and a requirement to conduct a platoon-sized area ambush.

Standards: (1) Developed a plan that included the application of troop-leading procedures, the mission, organization, command and control measures, routes, movement techniques, actions at and withdrawal from the ambush sites, passage of lines, fire support available, and actions on enemy contact while moving to or from the ambush site.

(2) Prepared for the ambush by cleaning and test-firing all weapons, performing vehicle and equipment maintenance (if required), inspection of equipment, resupply and rehearsals, and other inspections, as required.

(3) During the execution phase, the platoon conducted passages of lines (if required) and moved to occupy the objective rally point (ORP). From there, selected a central kill zone and setup squad-sized point ambushes on routes leading into the ambush area. Upon initiation of the central ambush, the outlying ambushes sealed off the ambush area and prevented enemy troops from escaping the ambush area (or enemy reinforcements from entering the area). Upon completion of the mission, the platoon took actions to return to friendly lines.

Performance Steps

1. Prepare the unit for the mission.

- a. Upon receipt of the operation order, develop a preliminary plan.

NOTE 1: Ensure that all key members of the unit and any attachments are available throughout the planning phase.

- b. Issue a warning order.

NOTE 2: Coordination may be conducted by someone other than the patrol leader/platoon sergeant.

- c. Conduct coordination as required: fire support, friendly forward unit, adjacent patrols.

NOTE 3: The leader must make either a map, ground, or aerial reconnaissance prior to completing his plan.

- d. Conduct reconnaissance.

- e. Complete the plan.

- f. Issue operation order.

NOTE 4: The leader must, as part of his planning, establish a priority of rehearsals which takes into consideration the time and resources available.

NOTE 5: Rehearsals are repeated as necessary to ensure thorough understanding of the plan by all platoon members and attachments.

- g. Conduct rehearsals as time permits.

- h. Conduct a final inspection before leaving the planning area.

2. Conduct movement to the objective area.

- a. Move to and occupy the initial rally point.

- b. Conduct final coordination to exit friendly unit.

- c. Move through the friendly forward unit's position(s).

- d. Conduct a security halt outside of the friendly forward unit's positions and final protective fire's limits.

NOTE 6: As the platoon moves, the possibility of chance enemy contact increases; therefore, the platoon must be prepared to execute its contact drills.

- e. Conduct actions on enemy contact (if contact is made).

NOTE 7: As the platoon moves, the leader will identify and announce enroute rally points.

NOTE 8: The leader will direct the actions to take upon identifying a suspected danger area enroute to the objective area.

Performance Steps

- f. Conduct movement techniques en route to the objective.
- g. Upon reaching the vicinity of the tentative ORP, conduct a security halt and dispatch a reconnaissance element to secure the ORP.
- h. Confirm and occupy the ORP.

NOTE 9: The platoon leader will conduct a leader's reconnaissance of all ambush sites if time, terrain, and the situation permit. At a minimum, the leader will give specific instructions to the leaders of the outlying ambushes as to their time to be in position and any changes to the original plan.

- i. If possible, conduct a leader's reconnaissance of all ambush sites.

3. Conduct actions at the ambush area.

NOTE 10: Direct the various leaders participating in the actions at the objective to time their movement to and from the ORP and to estimate how long it will take to get their elements into position.

- a. Upon completion of the leader's recon, issue an operations order or change the original plan. Allow sufficient time for subordinate leaders to brief their elements as required.

NOTE 11: Elements will depart the ORP based on the leader's estimate of how long it will take for them to get in position.

- b. Direct that the various elements of the central ambush force move to their positions.

NOTE 12: Throughout the waiting period (which may be lengthy), ensure that troops maintain their alertness.

NOTE 13: The outlying ambushes will alert the leader (located in the vicinity of the central kill zone) by use of prearranged signals when enemy troops are entering the target area. The leader of the outlying ambush force will attempt to notify the platoon sergeant/ patrol leader of the number of enemy troops, type equipment and vehicle and, if possible, their rate of movement as well as any other information that the leader requested in his original order.

NOTE 14: The signal to initiate the ambush should be from a casualty producing weapon, demolitions, machine gun, tube-launched, optically tracked, wire-guided (TOW) system, Dragon, or a volley of AT-4s (the manner in which the ambush is determined by the assets available and the nature of the target). All weapons should be firing at the maximum rate of fire for a predesignated period of time, or until the order to shift or lift fire is given.

- c. Upon determining that the desired target is in the kill zone, give the signal to initiate the ambush.

NOTE 15: When the assault element is required to assault the kill zone, the leader will give the signal to either shift or lift fire. This signal also may be used to signal the assault element to move into the kill zone.

Besides destruction of the enemy force, additional tasks may include:

- Searching the dead and wounded.
- Capturing and security enemy personnel.
- Completing the destruction of enemy equipment.

If the mission does not allow for the taking of wounded enemy personnel, direct that first aid is required and within the limits of the unit's capabilities be provided.

NOTE 16: Ensure that security is maintained throughout the entire operation prior to the withdrawal.

- d. Upon determining that the target has been suppressed and no return fire is being received, and if the situation allows, direct that the assault element move into and search the kill zone.

NOTE 17: The leaders of the outlying ambushes and the various element leaders in the central ambush position will render a status report to the platoon leader immediately upon entering the ORP.

- e. Account for all personnel and equipment.

NOTE 18: Dissemination of information may be accomplished during movement back to a friendly controlled area.

- f. Disseminate information as quickly as possible to inform all personnel of the information obtained during the actions at the objective.
- g. Based on the situation, the leader may call for indirect fire support to cover the platoon's withdrawal from the objective area.

Performance Steps

NOTE 19: The mission may require the unit to either return to friendly lines or be given another mission.
 h. Comply with instructions for actions to take upon completion of the mission.

Evaluation Preparation: Setup: At the test site, provide the leader with materials and information according to the task condition statement.

Brief Soldier: Issue the leader a mission.

Performance Measures**GO** **NO GO**

1. Prepared the unit for the mission.
2. Conducted movement to the objective area.
3. Conducted actions at the ambush area.

____ ____
 ____ ____
 ____ ____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
 FM 7-7
 FM 7-8

Conduct an Antiarmor Area Ambush by a Platoon

071-450-0036

Conditions: Given a combat environment, an Infantry platoon with organic weapon systems, and a mission to conduct an antiarmor area ambush.

Standards: (1) Planned. Developed a plan that defined the mission, task organization, control measures, signals, routes, movement techniques, actions on contact, actions on the objective, withdrawal, and reentry of friendly lines.

(2) Prepared. Cleaned and test fired weapons, performed scheduled maintenance on vehicles (if any) and equipment, resupplied platoon, and conducted rehearsals and inspections.

(3) Executed. Selected a general ambush site and organized squad ambushes around it. Initiated ambush. Squad actions prevented the enemy from escaping the ambush(es), prevented enemy reinforcements from entering the area, or both. Delivered isolating fire that trapped and destroyed the target.

Performance Steps

1. Make a tentative plan.

NOTE: A warning order should be issued to provide subordinate elements maximum time to prepare.

2. Start standing operating procedure (SOP) preparations (if appropriate).
3. Reconnoiter.

NOTE: Ground reconnaissance is the preferred method of terrain verification. A map reconnaissance must be conducted as a minimum.

4. Develop the final plan.
5. Continue preparations.

NOTE: The operation order is issued at the time and place specified in the warning order.

6. Request any supplies needed.
7. Receive and distribute supplies.
8. Rehearse.
9. Inspect (final inspections).
10. Depart friendly lines.
11. Confirm rally points.
12. Cross danger areas.
13. Occupy objective rally point (ORP).
14. Select central and outlying ambush sites.
15. Ambush elements leave ORP, occupy their positions, and await target.
16. Give the signal to initiate the ambush.

NOTE: When the assault element is required to assault into the kill zone, the leader gives the signal to lift or shift fire.

Performance Steps

This is the signal for the assault to start. Besides destruction of the enemy force, additional tasks in the kill zone may include:

- search for items of intelligence value.
- capturing enemy prisoners.
- completing the destruction of enemy equipment.

When the assault element has finished its mission in the kill zone or when the assault element is not required to assault the kill zone, the leader gives the signal to withdraw to the ORP.

17. Give the signal to withdraw the ambush.

Evaluation Preparation: Setup: At the site, provide all materials and equipment according to the task condition statement.

Brief Soldier: Tell the leader a plan was developed that included the mission, task organization, control measures and actions on the objective and he will conduct an antiarmor area ambush.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Made a tentative plan.	_____	_____
2. Started SOP preparations, if appropriate.	_____	_____
3. Reconnoitered.	_____	_____
4. Developed the final plan.	_____	_____
5. Continued preparations.	_____	_____
6. Requested any supplies needed.	_____	_____
7. Received and distributed supplies.	_____	_____
8. Rehearsed.	_____	_____
9. Inspected (final inspection).	_____	_____
10. Departed friendly lines.	_____	_____
11. Confirmed rally points.	_____	_____
12. Crossed danger areas.	_____	_____
13. Occupied ORP.	_____	_____
14. Selected central and outlying ambush sites.	_____	_____
15. Ambush elements left ORP, occupied their positions, and awaited target.	_____	_____
16. Gave the signal to initiate the ambush.	_____	_____
17. Gave the signal to withdraw the ambush.	_____	_____

Evaluation Guidance: Score the Soldier a GO if all performance measures are passed. Score the Soldier a NO-GO if any performance measure is failed. If the Soldier scores a NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 3-21.71

STP 31-18B34-SM-TG

**References
Required**

**Related
FM 7-8**

Subject Area 2: FORWARD OBSERVER

Locate a Target by Polar Plot**061-283-1003**

Conditions: You will be given a map of the target area, binoculars, an observe fire (OF) fan, declinated M2 compass, a target, a laser range finder, and digital message device (DMD), if so equipped.

Standards: Locate the target within 250 meters of the actual location. Announce the target location within 45 seconds (55 seconds with DMD) after identifying. Express direction to the nearest 10 mils and within +/- 60 mils of the actual direction. Express distance to the nearest 100 meters.

Performance Steps

1. Orient a map by map-terrain association.

NOTE: One of the key requirements for the delivery of accurate predicted fire on a target is accurate target location. To successfully perform his duties, the observer must be able to determine an accurate position of a target on the ground.

- a. The keys to accurate target location are as follows:
 - (1) Self-locating to within 100 meters each time you move.
 - (2) Using prominent terrain features to relate potential target areas to grid locations on the map.
 - (3) Making a thorough study of terrain by drawing a terrain sketch.
 - (4) Associating the direction in which he is looking with a direction line on the map.
 - (5) Ensuring that a planned target is always a recognizable point on the ground.
- b. Terrain-map association may not be possible when maps are unavailable or the terrain has no prominent features.
- c. There are two ways in which to orient a map.
 - (1) The map can be oriented by terrain association.
 - (a) Matching the terrain to the map by examining terrain features.
 - (b) By comparing the vegetation depicted on the map.
 - (c) Masking by the vegetation could camouflage a terrain feature making it hard to determine.
 - (d) Using the hydrography.
 - (e) Using manmade features.

2. Emplace and orient the OF fan.

NOTE: The OF fan is a transparent protractor that helps the observer identify on the map the terrain he sees on the ground. The OF fan has 17 radial arms that are 100 mils apart and cover a total of 1,600 mils. The observer to target distance is represented by arcs marked on the radial arms every 500 meters starting at 1,000 meters and extending to 6,000 meters. Once the observer has determined the direction to a target, he can use the OF fan to help him determine a distance on the map.

- a. Preparation. The scale of the OF fan must match the scale of the map. Prepare the OF fan as follows:
 - (1) Place the vertex of the fan over the observer's location.
 - (2) Place the center radial in the direction of the center of the observer's area of responsibility.
 - (3) Move the fan slightly until one of the radial lines is parallel to a grid line. The direction of that radial line is the same cardinal direction as the grid line.
 - (4) With a grease pencil, number the radial lines of known direction. Drop the last two zeros (4800 would be 48). Label every second radial line with the appropriate direction.

NOTE: Ensure that the students understand that the radial lines are 100 meters apart

- b. Use the OF fan as follows:
 - (1) Look at the terrain the target occupies.
 - (2) Determine the direction to the target.

Performance Steps

- (3) Estimate the distance to the target.
 - (4) Set off the estimated direction to the target.
 - (5) Set off the estimated distance to the target along the direction.
 - (6) Use terrain association to refine distance. Compare the terrain near the target with the terrain on the map.
 - (7) Determine target location.
3. Determine the data required to locate a target by the polar plot.
 - a. In the polar plot method of target location the observer describes the target location in relation to himself.
 - b. The observer's location must be known by the fire direction center.
 - c. The observer does not need a map to locate a target by polar plot.
 - d. This method is easy and quick; however, the observer must transmit his location to the fire direction center by a secure means.
 - e. The steps to locate a target by polar plot are as follows:
 - (1) Determine the observer target (OT) direction by one of the methods discussed earlier.
 - (2) Estimate the distance to the target (nearest 100 meters). Use all information obtained from the terrain-map study to determine the OT distance.
 - (3) Determine a vertical shift, if significant (greater than 35 meters). Determine an up or down shift if the difference between the observer's altitude and the target altitude is significant.
 - f. Determine the data required to locate a target by grid coordinates.
 - (1) Target location by grid coordinates is a natural extension of the polar plot method.
 - (2) The observer's location does not have to be known by the fire direction center.
 - (3) The observer normally locates targets to an accuracy of 100 meters (six-place grid).

Evaluation Preparation: Setup: Ensure that the target is readily identifiable to the Soldier and that the equipment listed in the conditions is present and operational.

Brief Soldier: Identify the target to the Soldier. Tell the Soldier to determine the location of the target within 45 seconds (55 seconds with DMD) by use of the polar plot method.

NOTE: Ensure that the tested Soldier understands exactly what is expected of him, do not help him in any way.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Determines the direction within +/-60 mils of the actual direction, and expresses it to the nearest 10 mils.	—	—
2. Determines the location of the target within 250 meters of actual location.	—	—
3. Determines the vertical shift (up or down) to the nearest 5 meters. If there is no obvious difference (greater than 30 meters), ignores the vertical shift. <ol style="list-style-type: none"> a. Stop timing the Soldier. 	—	—
4. Complete steps 1 through 3 in sequence.	—	—
5. Completes steps 1 through 3 in sequence.	—	—
6. Complete steps 1 through 3 within 45 seconds (55 seconds with DMD).	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

6-FSCATT

**References
Required**

Related
DVC 06-61
DVC 06-61A
FM 23-90
FM 6-30

Locate a Target by Shift From a Known Point

061-283-1004

Conditions: Given a map of the target area, binoculars, an observed fire (OF) fan, a declinated M2 compass, a stationary target, and a point known by you and the fire direction center (FDC) to which you have the distance and direction. The location of your observation point is plotted on your map.

Standards: Locate the target to within 250 meters of actual target location. Express direction to nearest 10 mils and to within 60 mils of the actual direction. Express right or left corrections to the nearest 10 meters and range correction to the nearest 100 meters.

Performance Steps

1. Determine the data required to locate a target by shift from a known point.
 - a. The observer describes the target location in relation to a point of known location.
 - (1) The observer does not need a map to use this method; he needs only a known point.
 - (2) The steps in locating a target by shift from a known point are described below.
 - (a) Identify to the fire direction center (FDC) the known point to be used.
 - (b) Determine the observer target (OT) direction as described earlier.
 - (c) Determine a lateral shift from the known point to the OT line. The lateral shift is determined by using the mil relation formula $W = R \times \text{mils}$. This formula is based on the assumption that an angle of 1 mil will subtend an arc of 1 meter at a distance of 1,000 meters. When a shift of greater than 600 mils is required, the accuracy of computing the lateral shift decreases. Another method of target location should be used.

NOTE: Ensure that the students understand the mil relation formula by having students compute lateral shifts.

- (d) Determine a range change along the OT line. The observer must determine whether the target is at a greater or lesser distance than the known point. If the target is further away than the known point the observer must ADD the estimated distance. If the target is closer than the known point the observer must DROP the estimated distance. The correction for distance between the known point and the target is expressed to the nearest 100 meters.
 - (e) Determine a vertical shift, if significant (more than 35 meters). If the observer determines that the target is at a higher altitude than the known point, the observer determines an UP correction based on the difference in altitude. If the observer determines that the target is at lower altitude than the known point, the observer determines a DOWN correction based on the difference in altitude. The correction for a difference in altitude is expressed to the nearest 5 meters.
 - a. Measuring deviation from a known point to the target.
 - (1) With binoculars. In looking through binoculars, you will see a mil scale, which is used to measure horizontal distance (Figure 1). This scale is divided into 10-mil increments, with 100 mils across the scale. Assume that Hill 905 in Figure 2 is your known point. You measure the deviation from Hill 905 to the target. The deviation is three 10-mil increments or 30 mils left of Hill 905.

Performance Steps

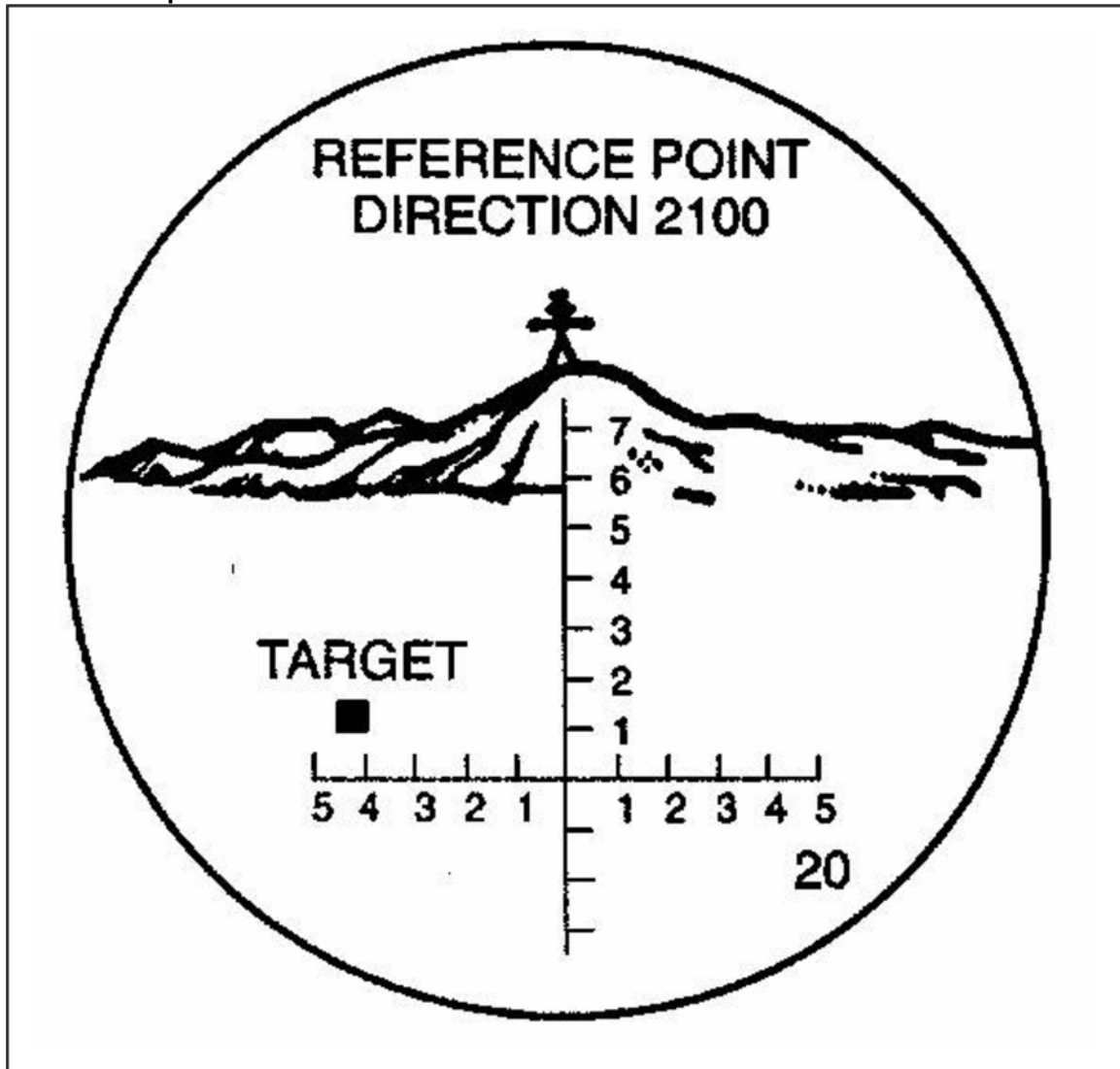


Figure 1. Using Binoculars to Measure Horizontal Distance

- (1) Right deviations - Add. In Figure 2, the direction to Hill 905 is 3,200 mils. With the binoculars, measure the deviation (30 mils). Since the target is to the right of the known point, add the deviation (30 mils) to the known direction (3,200 mils). The sum (3,230 mils) is the direction of the target. a. $3,200$ (direction to known point) + 30 (right deviation—add) = $3,230$ (direction to the target)
 - (2) Left deviations - SUBTRACT. In Figure 1, the direction of the reference point is 2,100 mils. With the binoculars, measure the deviation (40 mils). Since the target is left of the known point, subtract the deviation (40 mils) from the known direction (2,100 mils). The answer (2,060 mils) is the direction to the target. a. $2,100$ (direction to known point) - 40 (left deviation—subtract) = $2,060$ (direction to the target)
3. Determine the lateral shift from a known point to the target (Figure 2) using the mil relation formula.

Performance Steps

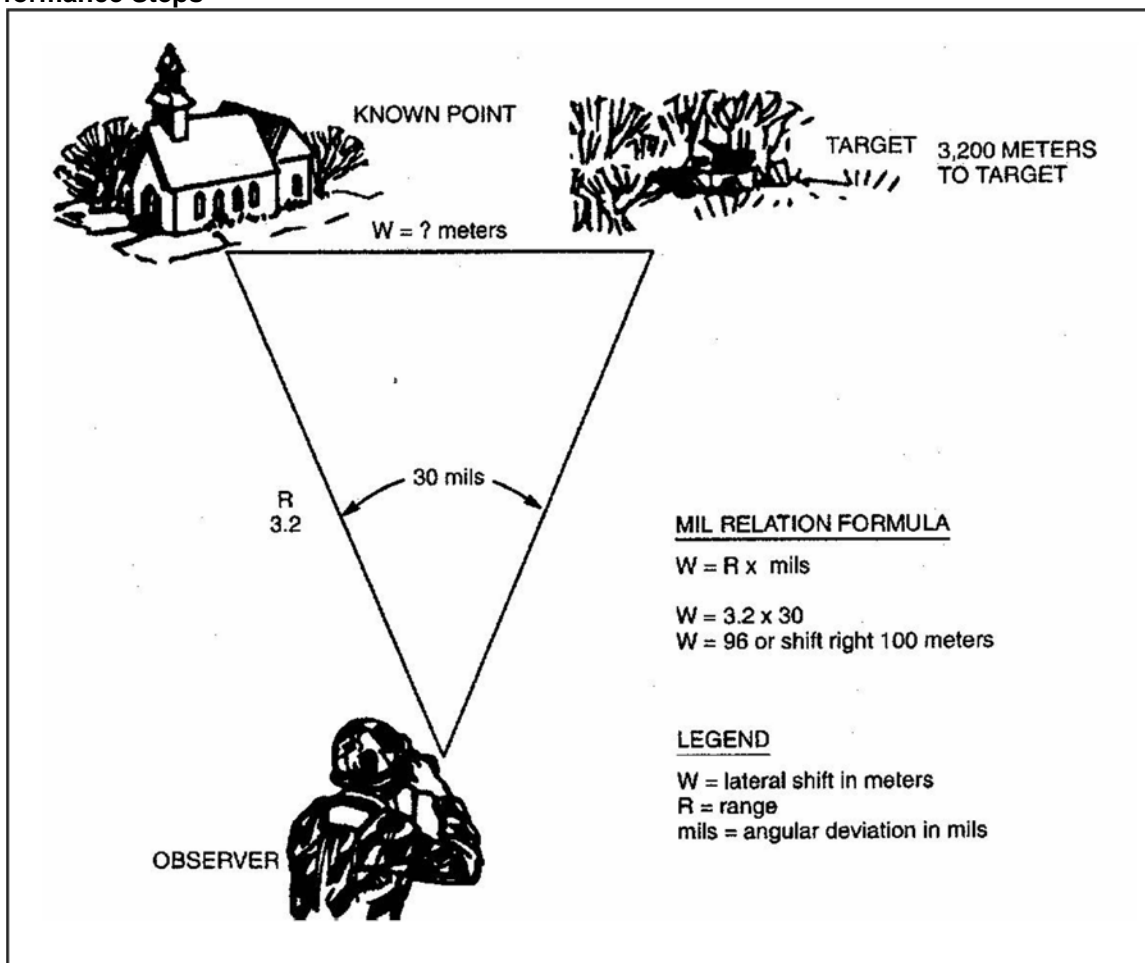


Figure 2. Determining Lateral Shift Using Mil-Relation Formula

- a. The formula is expressed as $W = R \times m$. Where m is the angular measurement in mils between the two points, R is the distance in thousands of meters (expressed to the nearest 100) to the known points from which the angle m was measured (Figure 2), and W is the lateral distance in meters.
- b. Using the mil relation formula to find the lateral shift in meters, perform the calculation, Rm . The range (R) is multiplied by the angular measure (m).
 - (1) For our purposes, the mil relation formula is used in conjunction with the distance to the known point expressed in thousands (to the nearest 100) to determine lateral shift. The lateral shift in meters (W) is equal to the distance to the known point (R) times the angular deviation in mils (m).
 - (2) The distance to the known point is the distance from the observer to the known point (to the nearest 100 meters) divided by 1,000. For example, if the distance to the known point (church in Figure 2) is estimated to be 3,200 meters, the distance to the known point is 3.2. a. $3,200 \text{ divided by } 1,000 = 3.2$
 - (3) Now you are ready to determine the lateral shift. Multiply the distance to the known point (3.2) by the angular deviation (30 mils); the product is the lateral shift (96 meters) a. $3.2 (R) \times 30 (m) = 96$ (lateral shift) R 100 (W) b. Since the deviation is to the right, shift right 100. (Deviation is expressed to the nearest 10 meters).
4. Determine range change from the known point to the target (Figure 2).
 - a. The range change is estimated to the nearest 100 meters. If the target is beyond the known

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- point, add the range difference. If the target is closer than the known point, drop the range difference.
- b. For example, if the distance to the known point is 3,200 meters and the estimated distance to the target is 3,900 meters, the range change is 700 meters ($3,900 - 3,200 = 700$). Since the target is beyond the known point, add 700. If the target distance is estimated at 2,800 meters, the range change is 400 meters ($3,200 - 2,800 = 400$). Since the target is closer than the known point, drop 400. NOTE: Determine azimuths using a protractor and compute back azimuth (must be mastered as a prerequisite to this task).

Evaluation Preparation: Setup: Ensure that a target is readily identifiable to the soldier and the equipment listed in the conditions is present and operational. The evaluator must know the grid location, direction, and distance to the target that will be used.

Brief Soldier: Identify the target to the Soldier. Tell the Soldier to determine the location of the target using the shift from the known point method of target location.

NOTE: Ensure that the tested Soldier understands exactly what is expected of him, do not help him in any way.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier determine and announce direction from the observer to the target?	—	—
2. Did the Soldier determine and announce lateral shift from the known point to the target?	—	—
3. Did the Soldier determine and announce range change to the target?	—	—
4. Did the Soldier determine and announce elevation change between known point and the target?	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

6-FSCATT
DVC 06-61
DVC 06-61A
FM 23-90
FM 6-30

Request and Adjust Area Fire 061-283-1011

Conditions: Given target, observer location, a map with an observed fire (OF) fan, a terrain sketch (with left and right limits, and known points), artillery binoculars, and communications with the fire direction center (FDC).

Standards: Engage a target by completing a call for fire within 45 seconds (55 seconds with digital) of target identification. Enter fire for effect within 50 meters of the target in accordance with (IAW) FM 6-30.

Performance Steps

1. Call for fire.
 - a. A call for fire is a concise message prepared by the observer.
 - (1) It contains all information needed by the FDC to determine the method of target attack.
 - (2) It is a request for fire, not an order.
 - b. Regardless of the method of target location used, the normal call for fire is sent in three parts consisting of six elements.
 - (1) The six elements, in the sequence in which they are transmitted, are as follows;
 - (a) Observer Identification. This element of the call for fire tells the FDC who is calling for fire.
 - (b) Warning Order.
 1. The warning order clears the net for the fire mission and tells the FDC the type of mission and the type of target location that will be used.
 2. It is a request for fire unless prior authority has been given to order fire.
 3. The warning order consists of the type of mission, the size of the element to fire for effect, and the method of target location.
 - a. Adjust Fire. When the observer believes that an adjustment must be made due to questionable target location, he announces ADJUST FIRE.
 - b. Fire for Effect. The observer should ALWAYS strive for first round fire for effect. When the observer is certain that the target location is accurate and that the first volley should have the desired effect on the target, he announces FIRE FOR EFFECT.
 - c. Suppression. To quickly bring fire on a target that is not active, the observer announces SUPPRESS (followed by the target identification). This mission type is normally fired on pre planned targets, and a duration is associated with the call for fire.
 - d. Immediate Suppression and Immediate Smoke. When engaging a planned target or a target of opportunity that has taken friendly maneuver or aerial elements under fire, the observer announces IMMEDIATE SUPPRESSION or IMMEDIATE SMOKE.
 - e. Size of Element to Fire for Effect. The observer may request the size of the unit to fire for effect; for example BATTALION. The observer announces the last letter in the unit's call sign, at no time should a observer refer to a unit in the clear.
 - (c) Target Location.
 1. This element enables the FDC to plot the location of the target to determine firing data. The following are the methods of target location used:
 - a. Polar Plot. If the target is located by polar plot the observer announces POLAR for example, ADJUST FIRE, POLAR, OVER.
 - b. Laser Plot. The FDC needs to know as quickly as possible if the observer is using a laser. Although the that data is still polar, the computer system uses a different format from the fire mission index; for example, ADJUST FIRE, LASER POLAR, OVER.
 - c. Shift From a Known Point. If the target is located by the shift from a known point method of target location, the observer announces SHIFT (followed by the

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known point); for example, ADJUST FIRE, SHIFT KNOWN POINT 3, OVER.

d. Grid. If the target is located by grid coordinates, the word grid is not announced; for example, ADJUST FIRE, OVER.

(d) Target Description.

1. The observer must describe the target in enough detail that the FDC can determine the amount and type of ammunition to use.

2. The observer should be brief but accurate.

3. The description should contain the following:

a. What the target is.

b. What the target is doing.

c. The number of elements in the target.

d. The degree of protection.

e. The target size and shape if these are significant.

(e) Method of Engagement.

1. The observer may indicate how he wants to attack the target.

2. This element consists of the type of adjustment, trajectory, ammunition, and distribution.

a. Two types of adjustment may be employed - precision and area. Unless precision fire is specified, area fire will be used.

1. Precision fire is conducted with one weapon on a point target. It is used to obtain registration corrections or to destroy a target.

2. Area fire is used to attack an area target. Since many area targets are mobile, the adjustment should be as quick as possible, consistent with accuracy, to keep the target from escaping.

b. Danger Close. Danger Close is included in the method of engagement when the target is within 600 meters of friendly troops for mortar and artillery, 750 meters for naval gunfire 5-inch and smaller.

c. Mark. Mark is included in the method of engagement to indicate that the observer is going to call for rounds for either of the following reasons:

1. To orient himself in his zone of observation

2. To indicate targets to ground troops, aircraft, or fire support.

d. Trajectory. Low angle fire is standard for field artillery. If high angle fire is desired, it is requested immediately after the type of engagement. Mortars fire high angle only.

e. Ammunition. The observer may request any type of ammunition during the adjustment or the fire for effect phase of his mission. Shell high explosive (HE) with fuze quick is normally used in adjustment. If the observer does not request a shell-fuze combination in effect, the fire direction officer determines the shell-fuze combination.

f. Distribution. The observer may control the pattern of bursts in the target area. This pattern is called a sheaf.

(f) Method of Fire and Control.

1. The method of fire and control element indicates the desired manner of attacking the target, whether the observer wants to control the time of delivery of fire, and whether he can observe the target.

a. At my Command. If the observer wishes to control the time of delivery, he includes AT MY COMMAND in the method of control.

b. Cannot Observe. Indicates that the observer cannot see the target; however, he has reason to believe that a target exists at the given location.

c. Time on Target. The observer may tell the FDC when he wants the rounds to impact by requesting TIME ON TARGET (so many) MINUTES FROM.NOW, OVER or TIME ON TARGET 0830, OVER. The forward observer (FO) must conduct a time hack to ensure that 0830 on his watch is 0830 on the FDC's watch.

d. Continuous Illumination. If no interval is given by the observer, the FDC determines the interval by the burning time of the illuminating ammunition in use. If

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any interval is required, it is indicated in seconds.

e. Coordinated Illumination. The observer may order the interval between illuminating and HE shells, in seconds, to achieve a time of impact of the HE coincident with optimum illumination.

f. Cease Loading. The command CEASE LOADING is used during firing of two or more rounds to indicate the suspension of loading rounds into the gun. The gun section may fire any rounds that have already been loaded.

g. Check Firing. CHECK FIRING is used to cause an immediate halt in firing.

h. Continuous Fire. Continuous fire means loading and firing as rapidly as possible, consistent with accuracy, within the prescribed rate of fire for the equipment.

i. Repeat. REPEAT can be given during adjustment or fire for effect (FFE) missions.

2. Corrections of Errors.

- a. Errors are sometimes made in transmitting data or by the FDC personnel in reading back the data.
- b. If the observer realizes that he has made an error in his transmission or that the FDC has made an error in the read back, he announces CORRECTION and transmits the correct data.

3. Message to Observer.

- a. After the FDC receives the call for fire, it determines how the target will be attacked.
- b. That decision is announced to the observer in the form of a message to observer (MTO).
- c. The message to observer consists of four items discussed below:
 - (1) Unit(s) to Fire. The battery (or batteries) that will fire the mission is (are) announced.
 - (a) If the battalion is firing in effect with one battery adjusting, the FDC designates the FFE unit (battalion) and the adjusting unit using the last letter of the call sign.
 - (2) Changes to the Call for Fire. Any change to what the observer requested in the call for fire is announced.
 - (3) Number of Rounds. The number of rounds per tube in fire for effect is announced.
 - (4) Target Number. A target number is assigned to each mission to facilitate processing of subsequent corrections.

4. Purpose of Adjustments.

- a. An observer's prime concern is the placement of timely and accurate fires on targets.
- b. If the observer cannot locate the target accurately enough to warrant fire for effect he may conduct an adjustment.
- c. Normally, one gun is used in adjustment. Special situations in which more than one gun is used are so noted throughout this lesson.

5. Adjusting Point.

- a. When it is necessary for the observer to adjust fire, he must select an adjusting point.
- b. The point selected is called the an adjusting point. The location of this point is included in the target location element of the call for fire.

6. Spottings.

- a. A spotting is the observer's determination of the location of the burst with respect to the adjusting as observed along the observer target line. Spottings are made for the following:
 - (1) Deviation - the number of mils right or left of the observer target (OT) line.
 - (2) Distance - whether the burst occurred beyond or short of the target.
 - (3) When fuze time is fired, the height of burst (HOB) - the number of mils the burst is above the target
- b. The HOB spottings may be any one of the following:
 - (1) AIR - a round or group of rounds that burst in the air. The number of mils also is given. For example, a burst 10 mils above the ground would be spotted as AIR 10.
 - (2) GRAZE - a round or group of rounds that detonates on impact.
 - (3) MIXED - a group of rounds that result in an equal number of airbursts and graze bursts.

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- (4) MIXED AIR - a group of rounds that results in both airbursts and graze bursts when most of the bursts are airbursts.
- (5) MIXED GRAZE - a group of rounds that results in both airbursts and graze bursts when most of the bursts are graze bursts.
- c. Definite range spottings are required to make a proper range adjustment. Possible range spottings are as follows:
 - (1) OVER - a round that impacts beyond the adjusting point.
 - (2) SHORT - a round that impacts between the observer and the adjusting point.
 - (3) TARGET - a round that impacts on the target. This spotting is only used in precision fires.
 - (4) RANGE CORRECT - a round that impacts at the correct range.
 - (5) DOUBTFUL - a round that can be observed as OVER, SHORT, TARGET, or RANGE CORRECT.
 - (6) LOST - a round whose location cannot be determined by sight or sound.
 - (7) UNOBSERVED - a round not observed but known to have impacted (usually heard)
 - (8) UNOBSERVED OVER or SHORT - a round not observed but known to have impacted over or short.

7. Deviation Spottings.

- a. A deviation spotting is the angular measurement from the adjusting point to the burst as seen from the observer's position. During a fire mission, the observer measures the deviation, in mils, with his binoculars. Deviation spottings are measured to the nearest 5 mils for area fires and 1 mil for precision fires. Possible deviation spottings are as follows:
 - (1) LINE - a round that impacts on line with the adjusting point as seen by the observer.
 - (2) LEFT - a round that impacts left of the adjusting point in relation to the OT line.
 - (3) RIGHT - a round that impacts right of the adjusting point in relation to the OT line.
- b. Deviation spottings are taken from the center of a single burst or, in the case of platoon or battery fires, from the center of the group of bursts. Deviation spottings should be made as accurately as possible to help in obtaining range spottings.
- c. At times, the observer may be able to make a spotting even though he is unable to see the round impact.
- d. If the observer is unable to locate the round (either visually or by sound), the round is spotted LOST.
 - (1) A round may be lost for various reasons:
 - (a) It may be a dud (non functioning fuze), resulting in no visual or audible identification.
 - (b) The terrain may prevent the observer from spotting the round or its smoke.
 - (c) The weather may prevent the observer from spotting the round or its smoke.
 - (d) Enemy fire may prevent the observer from hearing or seeing the round.
 - (e) The FO simply may have failed to spot the round.
 - (f) Errors by the FDC or the firing piece may cause the round to be lost.
 - (2) When dealing with a lost round, the FO must consider his own experience, the level of FDC and/or gun section training, and the location of friendly elements with respect to the target. The observer should take corrective action based on his confidence in the target location, the accuracy of fire on previous missions, whether the lost round is an initial round or a subsequent round, and the urgency of the mission.
 - (3) When a round is lost, positive action must be taken. The observer can start a number of corrective procedures, such as one or more of the following:
 - (a) Begin a data check throughout the system, starting with his target location data and his call for fire.
 - (b) Request a white phosphorus (WP) round, a smoke round, or a 200 meter airburst with HE on the next round.
 - (c) Repeat.
 - (d) End the mission and start a new mission.
 - (e) Make a bold shift. The observer should be very careful in making a bold distance change when the target plots in the vicinity of friendly troops.

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8. Types of Corrections.

- a. After a spotting has been made, the observer must send corrections to the FDC to move the burst onto the adjusting point. The corrections are sent, in meters, in reverse of the order used in making spottings; that is, deviation, range, and HOB.
 - (1) Deviation Corrections.
 - (a) The distance in meters that the burst is to be moved (right or left) is determined by multiplying the observer's deviation spotting in mils by the OT distance in thousands of meters (the OT factor). Deviation corrections are expressed to the nearest 10 meters. A deviation correction less than 30 meters is a minor deviation correction. It should be sent to the FDC except as refinement data or in conduct of a destruction mission.
 - (b) To determine the OT factor when the OT range is greater than 1,000 meters, the range from the observer to the target (OT distance) is expressed to the nearest thousands and then expressed in thousands.
 - (c) For an OT range less than 1,000 meters, the distance is expressed to the nearest 100 meters and expressed in thousands.
 - (d) The computed deviation correction is announced to the FDC as LEFT (or RIGHT). The correction is opposite the spotting.
 - (e) Angle T is the angle formed by the intersection of the gun-to-target (GT) line and the OT line with its vertex at the target. If angle T is 500 mils or greater, the FDC should tell the observer this. If the observer is told that angle T is 500 mils or greater, at first he continues to use his OT factor to make his deviation corrections. If he sees that he is getting more of a correction than he asked for, he should consider cutting his corrections to better adjust rounds onto the target.
 - (2) Range Corrections.
 - (a) When making a range correction, the observer attempts to "add" or "drop" the adjusting round, along the OT line, from the previous burst to the target. If his spotting is SHORT, he will add; if his spotting was OVER, he will drop. The observer must be aggressive in the adjustment phase of an adjust fire mission.
 - (3) Height-of-Burst Correction.
 - (a) One gun is used in adjusting fuze time. The observer adjusts HOB (after a 100-meter range bracket has been established by using fuze quick) to obtain a 20-meter HOB in fire for effect. He does this by announcing a correction of UP or DOWN.
 - (b) If the spotting of the initial round is GRAZE, an automatic correction of UP 40 is sent. If the round is an airburst, the HOB of the round (in meters) is computed (HOB spotting in mils above the adjusting point multiplied by the OT factor). The appropriate HOB correction is given (to the nearest 5 meters) to obtain the desired 20-meter HOB.
 - (c) Fire for effect is entered only when a correct HOB is reasonably assured. Therefore, fire for effect is never begun when either the last round observed was spotted as a graze burst or the HOB correction is greater than 40 meters. If the initial rounds in fire for effect are spotted as MIXED, the subsequent surveillance report normally includes the correction UP 20.

9. Sequence of Subsequent Corrections.

- a. After the initial round(s) impact(s), the observer transmits subsequent corrections until the mission is complete. If the FDC is using battery computer system (BCS) or backup computer system (BUCS), all subsequent corrections or transmissions must include the target number or a means of identifying the mission to which the correction applies. These corrections include appropriate changes in elements previously transmitted and the necessary corrections for deviation, range, and HOB. Elements that may require correcting and the order in which corrections are announced are as follows:
 - (1) Observer-Target Direction. In the sequence of corrections, the OT direction is the first item sent to the FDC. It is sent if it has not been sent previously or if the OT direction changes

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by more than 100 mils from the previously announced direction. (Direction is normally sent to the nearest 10 mils but it can be sent to the nearest 1 mil, depending on the accuracy of the observer's equipment.)

- (2) **Danger Close.** If the adjustment of fires brings impacting rounds within danger close distance during the conduct of the mission, the observer must announce DANGER CLOSE to the FDC. The observer, using creeping fire, makes corrections from the round impacting closest to friendly troops. If the adjustment of fire moves the round outside the danger close distance, the observer transmits CANCEL DANGER CLOSE. Danger close distances are as follows:
 - (a) Artillery or mortars—600 meters.
 - (b) Naval gun 5-inch or smaller—750 meters.
 - (c) Naval gun larger than 5-inch—1,000 meters.
 - (d) 16-inch naval gun (improved conventional munitions [ICM] or controlled variable time [CVT])—2,000 meters.
- (3) **Trajectory.** The observer requests a change in the type of trajectory if it becomes apparent that high-angle fire is necessary during a low-angle adjustment or that high-angle fire is no longer necessary during a high-angle adjustment. For example, if during the conduct of the mission a target moves into a defilade position, the observer may change trajectory by transmitting the correction HIGH ANGLE. Conversely, if a target moves out of defilade into open terrain and high-angle fire is no longer necessary, the observer requests CANCEL HIGH ANGLE.
- (4) **Method of Fire.** The observer transmits any correction he wants to make in the method of fire. For example, if the observer wants to change from one gun to a platoon firing in order from left to right, he transmits the correction PLATOON LEFT. If he wants to change to a platoon firing in order from right to left, he transmits the correction PLATOON RIGHT.
- (5) **Distribution.** If an observer wants to change the distribution of fire from a BCS sheaf (circular with a 100-meter radius) to another type of sheaf, he transmits the sheaf desired (for example, CONVERGE, OPEN, or LINEAR or the target length, width, and attitude). Conversely, if the observer wants to change from a specific sheaf to a BCS sheaf, he transmits the Correction CANCEL, followed by the type of sheaf being used (for example, CANCEL CONVERGE [or OPEN] SHEAF).
- (6) **Projectile.** If the observer wants to change the type of projectile, he announces the desired change (for example, SMOKE or WP).
- (7) **Fuze.** If the observer wants to change the type of fuze or fuze action, he announces the desired change (for example, TIME, DELAY, or variable time [VT]).
- (8) **Volume.** If the observer wants to change the volume of fire, he announces the desired change (for example, 2 ROUNDS or 3 ROUNDS). Volume refers to the number of rounds in the fire-for-effect phase.
- (9) **Deviation Correction.** If the round impacts to the right or left of the OT line, the observer determines the correction required, to the nearest 10 meters, to bring the round onto the OT line. To make the correction, the observer transmits RIGHT (or LEFT)(so many meters). (Deviation corrections less than 30 meters are not sent to the FDC except when conducting a destruction mission or as refinement data.)
- (10) **Range Correction.** If the round impacts beyond the target on the OT line, the observer's correction is DROP (so many meters). If the round impacts between the observer and the target, the range correction is ADD (so many meters).
- (11) **Height-of-Burst Correction.** The observer transmits HOB corrections to the nearest 5 meters with the correction UP (or DOWN). In firing fuze time in an area mission, HOB corrections are made after the deviation and range have been corrected to within 50 meters of the target by using fuze quick in adjustment.
- (12) **Target Description.** Target description is sent before a control correction during immediate suppression missions and when a new target is being attacked without sending a new call for fire.
- (13) **Mission Type and/or Method of Control.** If the observer wants to change the mission type and/or method of control, he transmits the desired method of control (for example,

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- ADJUST FIRE, FIRE FOR EFFECT, or AT MY COMMAND). If the method of control being used includes AT MY COMMAND, his correction is CANCEL AT MY COMMAND.
- (14) Splash. An observer in a tactical situation may have difficulty identifying or observing his rounds. This may be because he has to stay down in a concealed position much of the time or because of other fire missions being conducted in the area. In any case, he may request assistance from the FDC by requesting SPLASH. The FDC informs the observer that his round is about to impact by announcing SPLASH 5 seconds before the round impacts. The observer may end splash by announcing CANCEL SPLASH.
 - (15) Repeat. REPEAT is used (in the adjustment phase) if the observer wants a subsequent round or group of rounds fired with no corrections to deviation, range, or HOB (for example, TIME, REPEAT). REPEAT is also used by the observer to indicate that he wants fire for effect repeated with or without changes or corrections to any of the elements (for example, ADD 50, REPEAT).
10. Adjustment Techniques. There are four techniques that can be used to conduct area adjustment fires. Successive bracketing is best when observers are inexperienced or when precise adjustment is required, such as precision registrations and destruction missions. It mathematically ensures that FFE rounds will be within 50 meters of the target. Hasty bracketing is best when responsive fires are required and the observer is experienced in the adjustment of fire. One-round adjustment provides the most responsive fires but generally requires either an experienced observer or an observer equipped with a laser range finder. Creeping fire is used in danger close missions. Upon completion of each mission, refinement data and surveillance are required. From this surveillance the FDC can determine the effectiveness of the fires.
- a. Successive Bracketing. After the first definite range spotting is determined, the observer should send a range correction to the FDC to establish a range bracket of known distance (one round over and one round short). Once the bracket has been established, the observer successively splits the bracket until he is assured the rounds will be within 50 meters of the adjusting point when he fires for effect. Normally, range changes of 100, 200, 400, or 800 meters are used to make splitting the bracket easier. The observer enters FFE when he is sure of rounds impacting within 50 meters of the adjusting point.
 - b. Hasty Bracketing. Experience has shown that effectiveness on the target decreases as the number of rounds used in adjustment increases. An alternative to successive bracketing is the hasty bracketing technique. Successive bracketing mathematically ensures the observer that the FFE rounds will impact within 50 meters of the adjusting point, however, it is a slow and unresponsive technique. Therefore, if the nature of the target dictates that effective fires are required in less time than the successive bracketing technique would take, the hasty bracketing technique should be used. The success of hasty bracketing adjustment depends on a thorough terrain analysis that gives the observer an accurate initial target location. The observer gets a bracket on his first correction much as in the successive bracketing technique. He uses this initial bracket as a yardstick to determine his subsequent correction. He then sends the FDC the correction to move the rounds to the target and FIRE FOR EFFECT.
 - c. One-Round Adjustment. Unlike the preceding two adjustment techniques, this method does not require the establishment of a bracket. The observer spots the location of the first round, calculates and transmits to the FDC the corrections necessary to move the burst of the round to the adjusting point, and fires for effect. This technique requires either an experienced observer or one with accurate distance-measuring equipment such as a laser range finder. All missions conducted by using a G/VLLD should be FFE or one-round adjustments.
 - d. Creeping Fire (Danger Close). The creeping method of adjustment is used during danger close missions. The observer should make range changes by creeping the rounds to the target, using corrections of 100 meters or less, rather than making large range corrections.
11. Fire for Effect. The purpose of area fire is to cover the target area with dense fire so that the greatest possible effects on the target can be achieved. The type and amount of ammunition requested by the observer depend on the type of target, its posture, and its activity. Fire for effect is entered during an adjust fire mission when a satisfactory adjustment has been obtained; that is, when the

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deviation, range, and HOB (if firing fuze time) have been corrected to provide effects on target.

- a. Normally, the observer using successive bracketing requests FFE when he splits a 100-meter bracket. Under certain conditions when the probable error in range (PER) of the weapon is 38 meters or larger, an observer is justified in calling for FFE when a 200-meter bracket is split. (In this situation, the FDC notifies the observer that the probable error in range [PER] is greater than 38 meters).
- b. If time fuze is used, the observer requests FUZE TIME after range and deviation have been corrected but before announcing FIRE FOR EFFECT. With fuze time, fire for effect is not requested until the HOB is correct or until the observer can compute the correction that should result in the correct HOB. Rules for adjusting fuze time are as discussed below.
 - (1) In splitting the 100-meter bracket, the correction is TIME, ADD (or DROP) 50, OVER. If range and HOB are correct (20 meters above ground), the observer sends FIRE FOR EFFECT, OVER.
 - (2) After FUZE TIME is requested, no more range or deviation corrections are sent to the FDC.
 - (3) If a round with fuze time is spotted as a graze burst and there have been no previous airbursts, the correction is UP 40, OVER.
 - (4) If a round with fuze time is spotted as a graze burst and the observer has spotted a previous airburst, the correction is UP 20, FIRE FOR EFFECT, OVER.
 - (5) If the observer spots an airburst, he should send the correction to achieve a 20-meter HOB and fire for effect. For example, if the HOB of the last round is 40 meters, the correction is DOWN 20, FIRE FOR EFFECT, OVER.
 - (6) Do not fire for effect—
 - (a) From a graze burst.
 - (b) If the correction is greater than DOWN 40.

12. Refinement and Surveillance. The observer should observe the results of the fire for effect and then take whatever action is necessary to complete the mission.

Evaluation Preparation: Setup: Ensure that a target is readily identifiable to the Soldier and the equipment listed in the conditions is present and operational. The evaluator must know the grid location, direction, and distance to the target that will be used.

Brief Soldier: Identify the target to the Soldier. Tell the Soldier to determine the location of the target.

NOTE: Ensure that the tested Soldier understands exactly what is expected of him, but do not help him in any way.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier identify procedures to request and adjust area fire?	—	—
2. Did the Soldier determines and transmits request for fire within 45 seconds?	—	—
3. Did the Soldier determine and transmits corrections within 10 seconds; enters FFE within 50 meters of the target?	—	—
4. Did the Soldier determine and transmits refinement and surveillance?	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 6-30

Related
6-FSCATT
DVC 06-61

STP 31-18B34-SM-TG

**References
Required**

Related
DVC 06-61A

Conduct a Suppression Mission

061-283-1013

Conditions: Given targets, observer location, a map with an observed fire (OF) fan, a terrain sketch (with left and right limits, and known points), artillery binoculars, a target list, signal operating instructions (SOI), and communications with the fire direction center (FDC), conduct a suppression mission in accordance with (IAW) FM 6-30.

Standards: Correctly request fire on an on-call target within 25 seconds.

Performance Steps

1. Identify procedures to conduct a suppression mission.
 - a. Announces correct on-call target number.
 - b. Announce the correct call for fire.
 - c. Complete steps 1 and 2 within 25 seconds (35 with digital).
2. Determine and transmits request for suppression within 25 seconds.
3. Determine and transmits refinement and surveillance.
4. Suppression. To quickly bring fire on a target that is not active, the observer announces SUPPRESS (followed by the target identification). Suppress (S) missions are normally fired on preplanned targets, and a duration is associated with the call for fire.
5. Suppression of a target limits the ability of the enemy personnel in the target area to perform their jobs. Firing high explosive (HE)/variable time (VT) or smoke creates apprehension and confuses the enemy. the effect of suppressive fires usually lasts only as long as the fires are continued. Suppression requires a low expenditure of ammunition; however, its inability to have lasting effect on a target makes it an unsuitable type of mission for most targets.
6. Suppression missions are normally fired by a two-gun section using two rounds of HE or VT. However, this procedure is addressed in the individual unit standing operating procedure (SOP) and may vary between units.

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable, and ready for use. Use the reference and the evaluation guide to score the Soldier's performance.

Brief Soldier: Tell the Soldier what he is required to do IAW the task conditions and standard.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier identify procedures to conduct a suppression mission?	—	—
2. Did the Soldier determine and transmits request for suppression within 25 seconds?	—	—
3. Did the Soldier determine and transmits refinement and surveillance?	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step if failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 6-30

Related
6-FSCATT
DVC 06-61
DVC 06-61A

Conduct an Immediate Suppression Mission

061-283-1014

Conditions: Given targets, observer location, a map with and observed fire (OF) fan, a terrain sketch (with CRP, left and right [L & R] limits, known points), artillery binoculars, a target list, and a signal operating instruction (SOI).

Standards: Correctly request fire on a planned target or target of opportunity within 25 seconds. Conduct an immediate suppression mission in accordance with (IAW) FM 6-30.

Performance Steps

1. Identify procedures to conduct a Immediate suppression mission.
 - a. Locate the target.
 - b. Prepare and transmit the call for fire.
2. Determine target location +/- 150 meters of actual target location (six digit grid) meters of the actual target location.
3. Determines and transmits request for immediate suppression within 25 seconds.
4. Transmits final refinement data, end of mission, and the effects observed.
5. Determines and transmits data to neutralize target if neutralization is desired.
6. Immediate Suppression and Immediate Smoke. When engaging a planned target or target of opportunity that has taken friendly maneuver or aerial elements under fire, the observer announces IMMEDIATE SUPPRESSION or IMMEDIATE SMOKE (followed by the target location). Though the grid method of target location may be used in firing an immediate suppression or immediate smoke mission.

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable and ready for use. Use the reference and the evaluation guide to score the Soldier's performance.

Brief Soldier: Tell the Soldier what he is required to do IAW the task conditions and standard.

Performance Measures	<u>GO</u>	<u>NO GO</u>
NOTE. Scorer identifies the target to the Soldier.		
1. Did the Soldier identify procedures to conduct a Immediate suppression mission?	—	—
2. Did the Soldier determine target location +/- 150 meters of actual target location?	—	—
3. Did the Soldier determine and transmit request for immediate suppression within 25 seconds?	—	—
4. Did the Soldier determine and transmit refinement and surveillance?	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 6-30

Related

Conduct a Fire for Effect Mission

061-283-1015

Conditions: Given targets, observer location, a map with and observed fire (OF) fan, a terrain sketch (with control and reporting post [CRP], left and right [L & R] limits, known points), artillery binoculars, a target list, signal operating instruction (SOI), communications with fire direction center (FDC); conduct a fire for effect mission in accordance with (IAW) FM 6-30.

Standards: Locate a target within 150 meters of the actual location. Transmit a call for fire within 45 seconds of target identification (55 seconds with digital).

Performance Steps

1. Identify procedures to conduct a fire for effect (FFE) mission.
 2. Determine target location within +/-150 meters of the actual target location.
 3. Determine and transmit a fire for effect mission within 45 seconds.
 4. Determine and transmit refinement and surveillance.
 5. FFE. The observer should always strive for first-round FFE. The accuracy required to fire for effect depends on the accuracy of target location and the ammunition being used. When the observer is certain that the target location is accurate and that the first volley should have the desired effect on the target so that little or no adjustment is required, he announces FIRE FOR EFFECT.
 - a. The purpose of area fire is to cover the target area with dense fire so that the greatest possible effects on the target can be achieved. The type and amount of ammunition requested by the observer depend on the type of target, its posture, and its activity. FFE is entered during an adjust fire mission when a satisfactory adjustment has been obtained; that is, when deviation, range, and height-of-burst (HOB) (if firing time fuze) have been corrected to provide effects on target. Normally, the observer using successive bracketing requests FFE when he splits a 100-meter bracket. Under certain conditions when the probable error in range (PER) of the weapon is 38 meters or larger, an observer is justified in calling for FFE when a 200-meter bracket is split. (In this situation, the FDC notifies the observer that the PER is greater than 38 meters). If fuze time is used, the observer requests FUZE TIME after range and deviation have been corrected but before announcing FFE. With fuze time, FFE is not requested until the HOB is correct or until the observer can compute the correction that should result in the correct HOB. Rules for adjusting fuze time are as discussed below. In splitting the 100-meter bracket, the correction is TIME, ADD (or DROP) 50, OVER. If range and HOB are correct (20 meters above the ground), the observer sends FFE, OVER. After FUZE TIME is requested, no more range or deviation corrections are sent to the FDC. If a round with fuze time is spotted as a graze burst and there have been no previous air bursts, the correction is UP 40, OVER. If a round with fuze time is spotted as a graze burst and the observer has spotted a previous air burst, the correction is UP 20, OVER. If the observer spots an air burst, he should send the correction to achieve a 20-meter HOB and FFE. For example, if the HOB of the last round is 40 meters, the correction is DOWN 20, FFE, OVER.
- DO NOT FFE:
- From a graze burst.
 - If the

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable and ready for use. Use the reference and the evaluation guide to score the Soldier's performance.

Brief Soldier: Tell the Soldier what he is required to do IAW the task conditions and standard.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier identify the procedures to conduct a fire for effect mission?	_____	_____
2. Did the Soldier determine target location within +/-150 meters of actual target location?	_____	_____
3. Did the Soldier determine and transmit a fire for effect mission within 45 seconds?	_____	_____
4. Did the Soldier determine and transmit refinement and surveillance?	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

FM 6-30

Related

6-FSCATT

DVC 06-61

DVC 06-61A

FM 6-30

Request and Adjust for Coordinated Illumination

061-283-1021

Conditions: Given targets, observer location, a map with and observed fire (OF) fan, a terrain sketch (with CRP, left and right [L & R] limits, known points), artillery binoculars, a target list, signal operating instruction (SOI), communications with fire direction center (FDC); request and adjust coordinated illumination mission in accordance with (IAW) FM 6-30.

Standards: Properly request and adjust coordinated illumination. Determine and transmit calls for fire for illumination and high explosive (HE) ammunition within 45 seconds. Determine subsequent corrections within 10 seconds.

Performance Steps

1. Identify procedures to request and adjust coordinated illumination.
 - a. In the call for fire, ILLUMINATION is given as the type projectile and the appropriate range or lateral spread is given as the distribution. Procedures for adjusting illumination are discussed
 - b. Range and deviation are adjusted by use of standard observed fire procedures. The adjustment of the illumination to within 200 meters of the adjusting point is considered adequate because of the size of the area illuminated by the flare. Range and deviation correction of less than 200 meters should not be made.
 - c. The best position of a flare in relation to the area to be illuminated depends on terrain and wind. Generally, place the flare to one flank of the area and at about the same range. In a strong wind, the point of burst must be some distance upwind from the area to be illuminated, because the flare will drift. If the area is on a forward slope, the flare should be on a flank, at a slightly shorter range. For illuminating a very prominent object, visibility is better if the flare is placed beyond the object so the object is silhouetted.
 - d. The proper height-of-burst (HOB) allows the flare to strike the ground just as it stops burning. The HOB corrections are made in multiples of 50 meters. Variations in time of burning between individual flares make any finer adjustment of the HOB impractical.

NOTE: When using a night observation device, the observer should ensure that the flare burns out appreciably (100 mils) above his adjusting point so as not to cause the device to wash out.

When burnout occurs during descent, the HOB correction is estimated from the height of the flare when it burned out. When visibility permits, the spotting (height of the burnout above the ground) may be measured with binoculars. The HOB spotting (in mils) is multiplied by the observer target (OT) factor to determine the height of burnout (in meters). The height is expressed to the nearest 50 meters and is sent as a DOWN correction.

EXAMPLE:

The flare burns out 20 mils above the ground. The OT factor is 3; $20 \text{ mils} \times 3 = 60 \text{ meters} > 50 \text{ meters}$. The correction is DOWN 50.

When the flare continues to burn after it strikes the ground, a correction is required to raise the HOB. The length of time, in seconds, that the flare burns on the ground is counted and multiplied by the rate of descent (see Table 8-4). The product is expressed to the nearest 50 meters and sent as an UP correction.

EXAMPLE:

The flare burned 23 seconds on the ground; 23×5 (rate of descent for M485A2) = 115 meters. The correction is UP 100 (expressed to the nearest 50 meters).

- e. When the observer has located a target suitable for HE or other fire, he initiates a call for fire in the normal manner. If no better means of designating the location of the target is possible, the burst center of the illumination can be used as a reference point. If the observer decides to adjust the illuminating fire and the HE fire concurrently, he prefaces corrections pertaining to illumination with the word ILLUMINATION and those pertaining to HE with the letters HE; for

Performance Steps

example, ILLUMINATION, ADD 200; HE, RIGHT 60, ADD 200. Once the observer has adjusted the illuminating shell to the desired location, he should control the rate of fire and number of pieces firing. This reduces ammunition expended to the minimum necessary for the required observation.

COORDINATED ILLUMINATION:

The observer allows the FDC to control the firing of both illumination and HE by announcing COORDINATED ILLUMINATION in his call for fire. When the illumination has been adjusted to yield the best light on the target, the observer announces ILLUMINATION MARK to tell the FDC the exact time the target is best illuminated. The FDC times the interval between the actual firing of the illuminating round and the receipt of the observer's ILLUMINATION MARK. By comparing this time interval with the time of flight of the HE, the FDC can control the firing of the HE rounds, so that they arrive at the target during maximum illumination. As an alternate method, the observer may request COORDINATED ILLUMINATION and announce the method of control as BY ROUND, AT MY COMMAND. This indicates that both HE and illumination will be fired only at the observer's command. As soon as the FDC reports that the illuminating and HE fires are ready, the observer commands the firing of illumination. Then he gives the command to fire the HE so that it impacts during the period of maximum illumination of the target. The observer can request the HE time of flight to better coordinate the fire.

- f. Because of the amount of ammunition expended, the least desirable method is for the observer to request CONTINUOUS ILLUMINATION. In this technique, the FDC fires illumination continuously (intervals between firing depend on the type of projectile) while the observer adjusts HE.

- g. EXAMPLE:

The observer hears a number of heavy vehicles at an azimuth estimated at 5800. He cannot detect any lights and the entire area is in complete darkness. Judging from the sounds and a study of his map, the observer estimates the source of the noises as grid NB616376. This location is about 2,000 meters from his observation post. He sends the following call for fire (CFF) to a 155-mm battery using M485A2.

P53 THIS IS P67, ADJUST FIRE, OVER.

GRID NB616376, OVER.

VEHICLE NOISES, SUSPECTED TANKS, ILLUMINATION, OVER.

The first illuminating round bursts about 100 mils left of the suspected area and burns out 40 mils too high (measured with binoculars). Using an OT factor of 2, the observer transmits the following:

DIRECTION 5800, RIGHT 200, DOWN 100, OVER.

(Deviation = 100 mils X 2 = 200 meters. HOB = 40 mils X 2 = 80 meters > 100 meters.)

The second round bursts short near the OT line but is too low. It burns 6 seconds on the ground. The observer requests ADD 400, UP 50, OVER (6 X 5 = 30 > 50).

The third round bursts at the appropriate height over the suspected area. The observer identifies the target and waits until the target is best illuminated and then transmits ILLUMINATION MARK, OVER.

The observer then proceeds into the coordinated illumination phase of the mission. His call is as follows:

COORDINATED ILLUMINATION, OVER.

ADJUST FIRE, GRID NB621382, OVER.

2 TANKS AND A PLATOON OF INFANTRY, improved conventional munitions (ICM) IN EFFECT, OVER.

The observer may also have sent his target location by polar plot (ADJUST FIRE, POLAR, OVER) or by shifting from the center of the illumination (ADJUST FIRE, SHIFT, ILLUMINATION, OVER).

NOTE: For any illuminating round that in the observer's judgment provides maximum or enough illumination for the mission, the observer may transmit ILLUMINATION MARK. A separate marking round is a waste of ammunition.

2. Determine and transmit request for illumination within 45 seconds.

Performance Steps

3. Determine and transmit corrections within 10 seconds.
4. Determine enemy activity, transmit coordinated illumination within 10 seconds.
5. Determines and transmits request for fire within 45 seconds.
6. Determine and transmits corrections within 10 seconds.
7. Determine and transmits refinement and surveillance.

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable, and ready for use. Use the reference and the evaluation guide to score the Soldier's performance.

Brief Soldier: Tell the Soldier what he is required to do in accordance with (IAW) the task conditions and standard.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier identify the procedures to request and adjust coordinated illumination?	—	—
2. Did the Soldier determine and transmit request for illumination within 45?	—	—
3. Did the Soldier determine and transmit corrections within 10 seconds?	—	—
4. Did the Soldier determine enemy activity, transmit coordinated illumination within 10 seconds?	—	—
5. Did the Soldier determine and transmit request for fire within 45 seconds?	—	—
6. Did the Soldier determine and transmit corrections within 10 seconds?	—	—
7. Did the Soldier determine and transmit refinement and surveillance?	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 6-30

Related

Request and Adjust Final Protective Fires

061-283-2002

Conditions: Given targets, observer location, a map with and observed fire (OF) fan, a terrain sketch (with CRP, left and right [L & R] limits, known points), artillery binoculars, a target list, signal operating instructions (SOI), communications with fire direction center (FDC); request and adjust final protective fires in accordance with (IAW) FM 6-30.

Standards: Properly request and adjust final protective fires (FPF) on the location indicated by the company and/or team commander.

Performance Steps

1. Identify procedures to request and adjust an FPF.
 - a. Determine the center location and adjusting point within 250 meters.

NOTE: The FPF is normally designated by the maneuver commander.

- b. Locations are accomplished in the same manner as in irregularly shaped targets by determining a center grid and an attitude. The FPF is usually 200 to 400 meters in front of friendly troops (danger close).
 - c. The grid to the target will not be sent. A point that is a safe distance (400 to 600 meters) beyond friendly troops will be picked, encoded, and sent to the FDC.
 - d. An FPF is a prearranged barrier of fire designed to protect friendly troops. The size of the FPF depends on the type and number of weapons. FM 6-30 for sizes of FPFs for various weapon systems.
 2. Determine and transmit request for fire.
 - a. This is accomplished in the same manner as when requesting fire on an irregularly shaped target with the exception of sending an encoded point that is a safe distance beyond friendly troops.
 - b. Fuze delay should be used in adjusting to minimize the effects on your position and the friendly troops. Any other fuze has a greater chance of causing damage to friendly equipment or personnel. When firing the FPF, everyone must take cover.
 - c. Example of the call for fire.
H12 THIS IS H18, ADJUST FIRE, OVER.
GRID, I SET, AC XYLPEFTX, OVER.
FINAL PROTECTIVE FIRE, ATTITUDE 1900, DELAY OVER.
 3. Determine and transmit corrections within 50 meters of FPF.
 - a. Keep in mind the location of all friendly troops. The only differences are that range corrections are sent in 100-meters increments or less and corrections of 50 meters or less in range or deviation will not be fired.
 - b. Only the center gun will fire if the FDC is equipped with a battery computer system (BCS) or a backup computer system (BUCS). Once that gun is adjusted to the center of the FPF, the mission is ended. All other guns are computed from data fired.
 - c. If manually computed, all guns will fire in adjustment. The firing unit will fire one volley centered on or about the initial grid sent by the observer. The observer begins adjustment with the flank piece closest to the FPF line. Once the first gun is adjusted, the observer announces NUMBER (so-and-so) IS ADJUSTED, NUMBER (so and so), REPEAT, and adjusts each weapon in succession. Creeping fire must be used because of the danger close situation.
Example:
FO—DIRECTION 0810, NUMBER 6, LEFT 100, DROP 100, OVER.
FDC—DIRECTION 0810, NUMBER 6, LEFT 100, DROP 100, OUT. SHOT, OVER.
FO—SHOT OUT. NUMBER 6, DROP 50, NUMBER 6 IS ADJUSTED. NUMBER 5, REPEAT, OVER.
FDC—NUMBER 6, DROP 50, NUMBER 6 IS ADJUSTED. NUMBER 5, REPEAT, OUT.

Performance Steps

4. Determine and transmit refinement and surveillance.
 - a. Determine when round(s) are within 50 meters of adjusting point, record as FPF, and end the mission. Corrections of 50 meters or less will not be fired. They are only sent in refinement.
 - b. In some instances, there will not be time to “shoot in” the FPF. In these cases, the FPF will be located for the FDC by giving the grids of the two ends or giving the center grid and attitude (grids will be encoded).
5. Establish an FPF.

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable and ready for use. Use the reference and the evaluation guide to score the Soldier’s performance.

Brief Soldier: Tell the Soldier what he is required to do IAW the task conditions and standard.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier identify the procedures to request and adjust final protective fires?	_____	_____
2. Did the Soldier determine and transmit request for fire?	_____	_____
3. Did the Soldier determine and transmit corrections until within 50 meters of the FPF?	_____	_____
4. Did the Soldier determine and transmit refinement and surveillance?	_____	_____
5. Did the Soldier establish a FPF?	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 6-30

Related
6-FSCATT
DVC 06-61
DVC 06-61A

Conduct an Immediate Smoke Mission**061-283-2021**

Conditions: Given targets, observer location, a map with and observed fire (OF) fan, a terrain sketch (with CRP, left and right [L & R] limits, artillery binoculars, signal operating instruction (SOI), communications with fire direction center (FDC); conduct an immediate smoke mission in accordance with (IAW) FM 6-30.

Standards: Completely obscure the target by using immediate smoke procedures IAW the references.

Performance Steps

1. Identify procedures to conduct an immediate smoke mission.
2. Determine placement point of immediate smoke.
 - a. The adjusting point on which the smoke is placed depends on weather conditions. Under normal circumstances, the point at which it is directed should be about 100 meters short of the maneuver-target line and 100 meters upwind of the enemy's location.
 - b. If the wind is a crosswind (blowing across the maneuver-target line), the smoke is placed upwind so that it obscures the enemy's vision along the maneuver-target line. If the wind is a head wind (blowing away from the target), the smoke is placed 100 meters short of the maneuver-target line.
 - c. Care must be used with head winds, since the smoke may blow onto the maneuver element. When the wind is a tail wind (blowing toward the target), the smoke is placed at least 200 meters short of the target to keep the smoke from drifting beyond the target.
3. Determines and transmits request for immediate smoke within 25 seconds.
4. Determines and transmits refinement and surveillance end of mission (EOM).
 - a. If smoke is obscuring the target, determine effects on target and announce further adjustments or EOM.
 - b. If only smoke is fired, the effects are TARGET OBSCURED. If high explosive (HE) is fired, the observer must wait until the smoke clears to determine the effects on the target.

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable and ready for use. Use the reference and the evaluation guide to score the Soldier's performance.

Brief Soldier: Tell the Soldier what he is required to do IAW the task conditions and standard.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier identify the procedures to conduct an immediate smoke mission?	—	—
2. Did the Soldier determine placement point of immediate smoke?	—	—
3. Did the Soldier determine and transmit request for immediate smoke within 25 seconds?	—	—
4. Did the Soldier determine and transmit refinement and surveillance EOM?	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 6-30

Related
6-FSCATT
DVC 06-61
DVC 06-61A

Conduct a Quick Smoke Mission

061-283-2023

Conditions: Given targets, observer location, a map with and observed fire (OF) fan, a terrain sketch (with control and reporting post [CRP], left and right [L & R] limits), artillery binoculars, signal operating instruction (SOI), communications with fire direction center (FDC); conduct a quick smoke mission in accordance with (IAW) FM 6-30.

Standards: Completely obscure the target by using quick smoke procedures in accordance with (IAW) the references.

Performance Steps

1. Identify procedures to conduct a quick smoke mission.
 2. Determine adjusting point for quick smoke.
 - a. The purpose of quick smoke is to obscure the enemy's vision or screen maneuver elements. The quick smoke mission is like a normal high explosive (HE) adjust fire mission: obscuring the enemy is required, but the urgency of the situation does not dictate immediate smoke procedures.
 - b. The mission is begun by adjusting with HE. Then smoke is fired when rounds are within 200 meters of the adjusting point. The quick smoke mission is used to obscure an area up to 600 meters wide. For areas larger than 600 meters, the observer can fire multiple quick smoke missions.
 - c. Smoke may be effective up to 1,500 meters downwind. When preparing a quick smoke mission, the observer determines the nature of the target and the location of the adjusting point. Then he determines the size of the area and wind direction in relation to the maneuver commander.
 - d. To select the adjusting point, the observer determines the wind direction and whether white phosphorous (WP) or smoke is to be fired in effect. The FDC must be informed of the target length, the target attitude, the wind direction, and the length of time the smoke is required.
 - e. The observer sends this information to the FDC as soon as possible (before commanding FIRE FOR EFFECT). The observer extends the time of effective smoke by requesting subsequent volleys.
 3. Determines and transmits request for quick smoke within 70 seconds.
 - a. If the smoke must be effective at a specific time, the observer requests AT MY COMMAND and the time of flight. To determine when to order the smoke fired, the observer adds the time of flight to the average buildup time of 30 seconds for WP and 60 seconds for smoke.
 - b. If the smoke is ineffective, the observer must decide whether to shift the smoke or to fire HE. If he decides to shift, there may be a break in the screen while new data are being computed.
 - c. The adjustment phase of the mission is conducted with shell HE until a 200-meter bracket is split.
- NOTE: When screening with 155-millimeter (mm) improved smoke (M825), no height-of-burst (HOB) adjustment is required. The observer enters fire for effect when he splits a 200-meter bracket. In addition, dual-purpose improved conventional munitions (DPICM) are used during the HE adjustment phase of smoke missions conducted with the M825 smoke. When a 200-meter bracket is split, the firing unit fires one round to make any refinements in range and deviation require and to adjust the HOB. There are three possible adjustments for HOB based on what the observer sees. The observations and adjustments are:
- a. Ground burst, the adjustment is up 100.
 - b. Canisters bouncing excessively, the adjustment is up 50.
 - c. Canisters too spread out, the adjustment is down 50.
4. Determines and transmits adjustments within 10 seconds; fire for effect.
 5. Determines and transmits refinement, and surveillance.

Performance Steps

- a. If smoke is screening the target, the observer will announce FIRE FOR EFFECT.
- b. If only smoke is fired, the surveillance will be TARGET OBSCURED. If HE has been fired, the observer will have to wait until the smoke clears to determine the effects on the target.

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable and ready for use. Use the reference and the evaluation guide to score the Soldier's performance.

Brief Soldier: Tell the Soldier what he is required to do IAW the task conditions and standard.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Did the Soldier identify the procedures to conduct a quick smoke mission?	_____	_____
2. Did the Soldier determine adjusting point for quick smoke?	_____	_____
3. Did the Soldier determine and transmit request for quick smoke within 70 seconds?	_____	_____
4. Did the Soldier determine and transmit adjustments within 10 seconds; fire fore effect?	_____	_____
5. Did the Soldier determine and transmit refinement, and surveillance?	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 6-30

Related
6-FSCATT
DVC 06-61
DVC 06-61A

Request Close Air Support (CAS)

061-284-3030

Conditions: Given a map, plotting equipment, signal operating instructions (SOI), communications equipment, a situation overlay, a target, and commander's guidance.

Standards: Request close air support (CAS) in sequence in accordance with (IAW) the references, FM 6-30/FM 6-20-30/40/50 .

Performance Steps

1. Identify the procedures to request CAS.
 - a. Immediate CAS.
 - (1) Immediate requests are used for air support mission requirements that were identified too late to be included in the current air tasking order (ATO).
 - (a) The J-Fire format was made to conform with DD Form 1972 which is used for immediate request. This format consist of eight (8) lines:
 1. "(Air support operations center [ASOC] call sign) this is (Battalion [BN] tactical air control party [TACP] call sign) with an immediate CAS request."
 2. "Immediate."
 3. (Target [TGT] is) "20 tanks" (type/quantity).
 4. (TGT location) "(6 digit grid/universal traverse mercator [UTM])" "(elevation in feet)."
 5. (Time-on-target [TOT]) "ASAP" (or time).
 6. Not applicable (N/A).
 7. Final control "call sign/frequency/contact point (CP)/initial point (IP)."
 8. "Friendly locals/weather/threats."
 - (2) Immediate request are sent through specific channels.
 - (a) Request below battalion level are forwarded to the battalion command post
 - (b) The battalion commander, air liaison officer (ALO), and S-3 consider each request.
 - (c) Approved request are transmitted through the TACP at battalion:
 1. The air force air request net is used.
 2. During transmission, TACPs at each intermediate headquarters monitors and acknowledges receipt of the request.
 3. Silence by the intermediate TACPs indicates approval by the associated headquarters, unless, within a specific time period, a disapproval is transmitted.
 4. The ASOC at Corps tactical operations center allocates sorties once the Corps commander approves the request.
 5. After the approval of the air request, the TACP or tactical air coordinator (Airborne) (TAC-A) receive the fighter mission data from the ASOC. Mission data includes:
 - Mission number.
 - Fighter call sign.
 - Number and type of aircraft (sorties).
 - Ordnance.
 - TOT/station.
 6. When there is no air force air controller (AFAC) or battalion TACP, in an emergency, the fire support team (FIST) will direct the tactical fighters that are equipped with compatible radios. In this case, the brigade TACP prepares the CAS mission briefing, and directs the aircraft onto the target via your transmissions.
 - b. Preplanned CAS.
 1. Preplanned CAS may be categorized as:
 - Scheduled mission-CAS strike on a planned target at a planned time (TOT).
 - Alert mission-CAS strike on a planned target or target area executed when requested by the supported unit. Usually launched from a ground alert (scramble), or flown from an airborne alert status.

Performance Steps

2. When planning CAS, the S-3 air must work closely with the S-3, FSO, and ALO.
3. Requirements that can be seen ahead of time, are included in the tactical air control center (TACC) air tasking order (ATO), and are forwarded as preplanned air requests.
 - a. DD Form 1972 is used to request preplanned CAS.
 1. Preplanned CAS requests involve any information, even general information about planned schemes of maneuver that can be used in the apportionment, allocation, and distribution cycle.
 2. Estimates of weapons effects needed by percentage, sortie time flows, peak need times, and anticipated distribution patterns are vital to preplanning the ATO. It is the ALOs and S3s responsibilities at all planning echelons to ensure that such information is forwarded through the battlefield control element (BCE) as soon as this information is foreseen.
 4. There are specific channels for preplanned CAS.
 - a. Request for preplanned tactical air (TACAIR) is submitted to the FS cell.
 - b. The commander, ALO, and S-3 at each evaluate the request, and if approved, assign a priority or precedence to the request.
 - c. The S-3 air forwards approved request by Army communications nets to the next higher echelon.
 1. The FS cell at Corps main CP makes the final consolidation and approves the preplanned TACAIR request.
 2. After approval, the request becomes the ground force request that is passed through the BCE to the TACC for execution.
 3. The TACC does the necessary planning and includes the mission in the ATO for execution.
2. Request close air support.
 - a. Attack execution.
 - (1) CAS Mission Briefing.

"THE 9 LINE" BRIEF (given to the aircraft):
(aircraft call sign) this is (your call sign) CAS briefing follows:

 - IP "(x-ray)"
 - Heading (IP to tgt) "_075_"(magnetic) (offset:) "L/R"
 - Distance (IP to tgt) "_10_" (nautical miles)
 - Target elevation "_1200_" (feet mean sea level)
 - Target description "_Tank company attacking west_"
 - Target location "(6 digit grid)" (latitude/longitude, utm, offsets, or visual)
 - Type mark "_laser_"(code) "_312_"
(wp, beacon, laser) (beacon, laser)
 - Location of friendlies "_2,000 meters south on high ground_"
 - "_Egress west to avoid artillery suppression_"
 - Remarks "_____"
 - "TOT_____" or time-to-tgt "stand by (minutes)____plus (seconds) ____ Hack".
 - (2) The mission briefing format may include the following additional information:
 - Hazards (weather or high terrain).
 - Attack restrictions (assume none, unless specified).
 - Attack frequency and FAC call sign.
 - Fire support integration.
 - Threat update.
 - Detailed description of the target area.
 - Abort code (obtained from the attack aircraft).
 - Clearance (cleared to depart, call departing).
3. Control Measures.
 - a. CP. The point at which the aircraft will make initial radio contact with the ground controller
 - b. IP. The point from which the aircraft starts the timed run toward the pull-up-point (PUP).

Performance Steps

- c. PUP. The point at which an aircraft at low level begins a climb to identify the target and to gain altitude for the strike on the target.

Evaluation Preparation: Setup: Ensure that all the equipment is available, serviceable, and ready for use. Use the reference and the evaluation guide to score the Soldier's performance. Brief Soldier: Tell the Soldier what he is required to do IAW the task conditions and standard.

Performance Measures**GO** **NO GO**

1. Did the Soldier identify the procedures to request CAS?
 - a. Immediate.
 - b. Preplanned.
2. Did the Soldier request CAS?
 - a. Immediate.
 - b. Preplanned.

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required**

FM 6-20-40
FM 6-30

Related

DD FORM 1972
FM 6-20-30
FM 6-20-50

Fire a Ladder Mission 071-074-0013

Conditions: Acting as a forward observer (FO)/squad leader, given a mounted mortar complete in a defilade position, ammunition, mortar crew, direction stake with mortar laid on it, a FO position with observable targets, and a firing table.

Standards: Take target under effective fire while using no more than the three adjusted rounds of the ladder to locate the target.

Performance Steps

The ladder method of adjustment, which is a modification of the bracketing method, reduces adjustment time and allows a more rapid delivery of fire for effect. The procedure for firing the ladder adjustment is as follows:

1. Estimate gun-target range. The mortar is either aligned on the target, or the FO/squad leader measures the deviation of the target from the registration point (RP) or other known point (amount of shift). He then estimates the gun-to-target (G-T) range.
2. Determine size of ladder. The FO/squad leader uses the minimum range change guide to determine the size ladder he must fire (Table 1):
The object is to have one of the three rounds impact beyond the target and one to fall short of the target (Figure 1). Once the target is between the far round and the near round, the FO/squad leader knows the exact range to the target (Figure 1). Using the example in Figure 2, the G-T range is 1,400 meters; therefore, the FO/squad leader fires a 200-meter ladder.

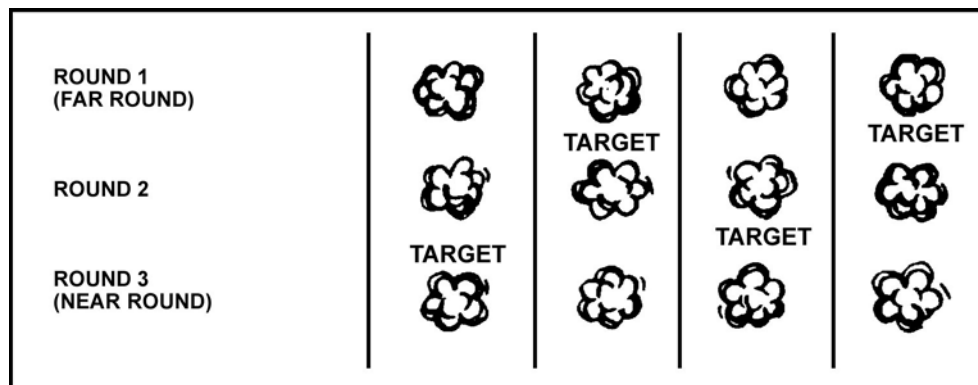


Figure 1. Determining Size of Ladder

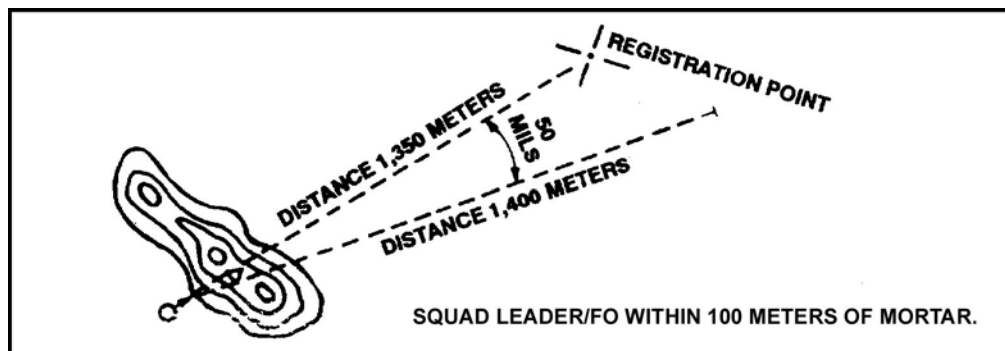


Figure 2. Firing a 200-Meter Ladder

Performance Steps

Table 1. Minimum Range Guide

GUN-TARGET RANGE	LADDER SIZE
0 - 999 METERS	100-METER LADDER
1,000 - 1,999 METERS	200-METER LADDER
2,000 - TO MAXIMUM RANGE	400-METER LADDER

3. Determine mil length of ladder.
 - a. The FO/squad leader must now determine the number of mils of elevation it takes to move the barrel from the elevation to fire the far round to the elevation to fire the near round (Figure 3).

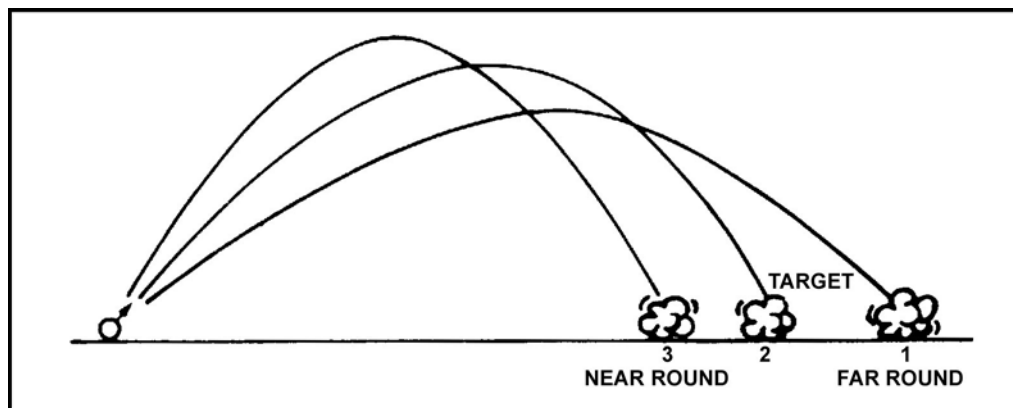


Figure 3. Determining Mil Length of Ladder

- b. The FO/squad leader uses the 81-mm firing table (Figure 4) to determine the mil length of the target. When he determines that the range to the target is 1,400 meters, he fires a 200-meter ladder. Round 1 is fired at a range of 1,500 meters; round 2 at 1,400 meters; and round 3 at 1,300 meters. He then uses the firing table and finds the following information (Table 2):

Performance Steps

CARTRIDGE, HE, M374A2 FUZE, PD, M524A6							FT 81-AJ-2 (ABRIDGED)						
RANGE M	ELEV MILS	MAX ORD M	CHG	ELEV MILS	MAX ORD M	CHG	RANGE M	ELEV MILS	MAX ORD M	CHG	ELEV MILS	MAX ORD M	CHG
75	1504	202	0				1000	1228	693	2	928	338	1
100	1472	200	0				1025	1217	687	2	867	307	1
125	1438	198	0				1050	1205	681	2			
150	1405	196	0				1075	1192	674	2			
175	1370	193	0				1100	1180	667	2	1301	975	3
200	1334	190	0	1501	533	1	1125	1167	660	2	1293	970	3
225	1296	186	0	1489	531	1	1150	1154	652	2	1285	965	3
250	1256	181	0	1476	530	1	1175	1140	644	2	1277	961	3
275	1214	176	0	1464	528	1	1200	1126	636	2	1268	955	3
300	1168	169	0	1451	526	1	1225	1111	627	2	1260	950	3
325	1116	161	0	1438	524	1	1250	1096	617	2	1252	945	3
350	1056	151	0	1425	522	1	1275	1080	607	2	1243	939	3
375	980	137	0	1412	520	1	1300	1063	596	2	1235	934	3
400	824	107	0	1398	517	1	1325	1046	584	2	1226	928	3
425				1385	514	1	1350	1027	571	2	1217	921	3
450				1371	511	1	1375	1006	556	2	1208	915	3
475				1357	508	1	1400	984	541	2	1199	908	3
500	1428	771	2	1343	504	1	1425	959	522	2	1190	902	3
525	1419	769	2	1329	501	1	1450	930	501	2	1180	894	3
550	1410	767	2	1315	497	1	1475	894	474	2	1170	887	3
575	1401	764	2	1300	493	1	1500	839	433	2	1160	879	3
600	1392	761	2	1285	488	1	1525				1150	871	3
625	1382	758	2	1269	483	1	1550				1140	863	3
650	1373	755	2	1253	478	1	1575				1129	854	3
675	1363	752	2	1237	473	1	1600	1237	1174	4	1118	845	3
700	1354	748	2	1220	467	1	1625	1230	1168	4	1107	836	3
725	1344	745	2	1203	461	1	1650	1223	1162	4	1095	826	3
750	1334	741	2	1185	454	1	1675	1216	1156	4	1083	816	3
775	1324	737	2	1167	447	1	1700	1208	1149	4	1070	805	3
800	1314	733	2	1148	439	1	1725	1201	1143	4	1057	793	3
825	1304	729	2	1128	431	1	1750	1194	1136	4	1044	781	3
850	1294	725	2	1106	422	1	1775	1186	1129	4	1029	768	3
875	1283	720	2	1084	412	1	1800	1178	1121	4	1014	754	3
900	1273	715	2	1059	401	1	1825	1170	1114	4	998	739	3
925	1262	710	2	1033	389	1	1850	1162	1106	4	981	722	3
950	1251	705	2	1003	375	1	1875	1154	1098	4	962	704	3
975	1240	699	2	969	358	1	1900	1146	1090	4	941	683	3
1000	1228	693	2	928	338	1							

Figure 4. 81-mm Firing Table

Table 2. Firing Information

RANGE	ELEVATION
1,300 METERS	1063 MILS
1,400 METERS	984 MILS
1,500 METERS	839 MILS

NOTE: Data is taken from an 81-mm firing table. He then subtracts the elevation for the far round from that for the near round:

NOTE: Mils per turn will depend on the mortar being used.

Near round—1,300 meters 1063 mils.

Far round—1,500 meters 839 mils.

Length of ladder in mils 224 mils.

Performance Steps

Length of ladder in turns:

224 divided by 10 = 22 turns.

NOTE: Since there are two intervals, the 22 turns are divided by 2. This gives 11 turns between rounds. The gunner fires the first round at elevation 839; he elevates 11 turns and fires the second round, then he elevates 11 more turns and fires the third round.

- c. In Figure 5, the target appears between round 1 and round 2. After firing round 3, the gunner leaves the mortar as it was when fired (up 22 turns). The FO/squad leader knows that if he goes down 11 turns, he could hit where round 2 hit; the target is halfway between No. 2 and No. 1 rounds. If he goes down five more turns, he will be right on target and be ready to fire for effect.

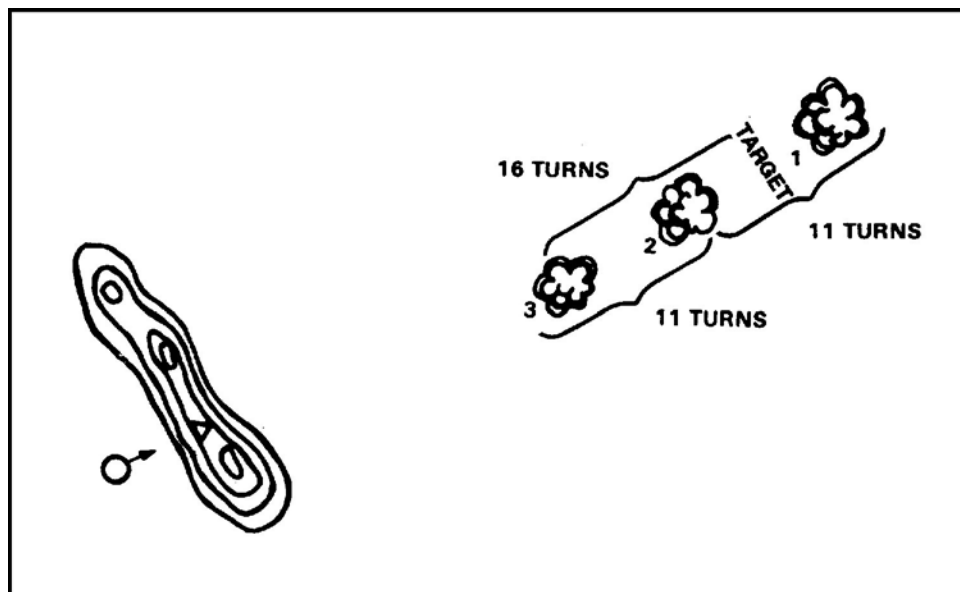


Figure 5. Firing for Effect

- d. The FO/squad leader gives the subsequent command to the gunner:
Five rounds, down sixteen turns. The gunner lowers the barrel 16 turns, then levels the elevation bubble on the sight by using the elevation micrometer knob. This allows the gunner to keep the mortar level during fire for effect.

Evaluation Preparation: Setup: At the test site, provide all equipment, material, information, and personnel given the task conditions statement.

Brief Soldier: Tell the Soldier that he is to fire a ladder mission and to engage the target.

Performance Measures

1. Determine size of ladder to be fired.
2. Determine total turns to cover ladder.
3. Determine turns between rounds.
4. Lay mortar at elevation to fire ladder.
5. Fire the ladder mission.
6. Determine turns to engage target.
7. Determine elevation to fire fire for effect.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required

Related

FM 7-90

Talk an Untrained Forward Observer Through a Fire Mission

071-321-4014

Conditions: As a computer, given a call for mortar fire from a Soldier untrained in forward observer (FO) procedure, map of the area, communication equipment, and company or battalion overlay.

Standards: Talk the untrained FO through the fire mission, and obtain the following information:

1. His (observer's) identification.
2. Target location.
3. Description of target.
4. Observer target (OT) direction (fire direction center [FDC] may have to determine this from given information).
5. Corrections for shifting the rounds onto the target.

Performance Steps

1. In the heat of battle, it may fall to a Soldier untrained in FO procedures to call for and adjust mortar fire. There are certain items of information that the computer in the FDC must have from the untrained FO to place effective fire on the target. Therefore, it falls to the computer to spend as much time and energy as needed to complete the mission. He must not interfere with the operation of the mortars in supplying fire support to the rest of the company or battalion.
2. The items of information the computer must talk the Soldier into giving are—
 - a. Observer's identification. Before the mortars will fire any mission, the computer must require the identification of the Soldier calling for fire. If the Soldier calling for fire cannot identify himself by a call sign or if there is any question as to whether the caller is friendly or enemy, the computer asks questions until the caller is identified as friendly before the mission is accepted.
 - b. Target location. Of the three methods of target location (grid coordinate; shift, with the marking round being part of this method; and polar plot), the computer must determine which method would be the best to use based on the information the Soldier can provide.
 - c. Target description. Target description lets the computer know what type of ammunition and fuze action to use to attack the target, and how many rounds to fire for effect once he has adjusted on the target.
 - d. Direction to the target. Direction to the target is required for the FDC to set up the plotting board so that the computer will be looking at the target the same way as the Soldier.
3. In calling for fire, the trained FO uses an exact format to place fire on a target. It is preferable if the untrained Soldier can provide all the information required in the formal call-for-fire format. However, if he cannot remember the format once he has contacted the FDC or is unable to determine the needed information, the computer must talk him through, giving the information needed to place fire on the target.
 - a. Location of the target.
 - (1) For the FDC to place fire on the target, the Soldier must give the location of the target to the FDC. If the Soldier has a map and compass, it is easy for the computer to ask for a grid location and direction to the target. If the Soldier does not have these items, it becomes more difficult to place fire on the target.
 - (2) Now the computer begins talking the Soldier through, giving him some information from which he can determine the location of the target. If the Soldier is still in the area of his platoon, the computer, using the company overlay, has an idea of where the Soldier is located.
 - (3) If the Soldier is with a patrol, the computer asks questions such as—
 - (a) Are there any roads in the area?
 - (b) Are there any road junctions?
 - (c) Are there rivers or streams?
 - (d) Are there any bridges?
 - (e) Are there any towns, houses, or prominent terrain features in the area?

Performance Steps

If the answer to any of these questions is yes, then those features can be used to help identify the Soldier's location.

- (4) If this procedure does not work, the computer can have an airburst round fired (60-mm, 81-mm, and 4.2-inch fire illumination). By telling the computer where he sees the round (right, left, over, or short) and how much (in meters) right, left, over, or short of his position it is, the Soldier can give the computer an idea of the Soldier's location.
 - (5) Once the Soldier's position is determined as close as possible, the computer asks how far the target is from the Soldier's position. The computer then has two points to work with. By asking whether the target is to the right, left, or on line with the illumination round, he has a rough direction to use in computing data for the first round and any correction to be fired. This method is a variation of the polar-plot method of target location.
 - (6) If, when asked questions as shown in paragraph (3), the Soldier can identify one or more features (natural or man-made) from his position, then the computer can use the shift method of target location. For example, the Soldier has a river with a bridge to his front that he has identified to the computer. The computer then acknowledges that he has identified the same point on his map. Using the hand-finger mil-relation method, the Soldier tells the FDC how many mils left or right of the bridge the target is and how many meters the target is over or short of the bridge. If the Soldier cannot remember the hand-finger mil-relation method, he simply tells the computer how many fingers the target is right or left of the bridge.
 - (7) Now that the target is located, the computer needs the direction from the Soldier's position to the target. On receiving the above information, the computer can determine the Soldier's location on the map and the direction to the target.
- b. Description of target. For the computer to determine the best type of ammunition and fuze action to fire on the target, the Soldier must identify the type of target—for example, troops in open, or troops in open fighting positions.
 - c. Corrections. The possibility of a first-round hit on the target is unlikely. The computer should be prepared to talk the Soldier through the steps needed to move the succeeding rounds onto the target.

Evaluation Preparation: Setup: At the test site, provide all material and equipment given in the task conditions statement. The test site selected must contain terrain features that can be identified on a map of the area. The Soldier acting as the FO must be briefed on how he is to respond to the computer's questions in determining the information required to locate and compute data to place fire on the target.

Brief Soldier: Tell the Soldier that he will be contacted by a Soldier who has had little or no FO training and needs mortar fire on a target in his area. Tell the Soldier that he must talk the untrained FO through, giving him the information required to place effective fire on the target.

WARNING: Mortar live fire will not be used during the testing of this task.

Performance Measures

1. Determine the Soldier's identification.
2. Determine the target's location to include the OT direction.
3. Obtain the target description.
4. Compute data to fire the first adjusting round.
5. Obtain the location of the round in relation to the target.
6. Determine the correction to move the round to the target.
7. Compute data to fire the round.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

Subject Area 3: FIRE DIRECTION CENTER (FDC)

Record Information on Firing Records

071-076-0002

Conditions: Given a DA Form 2399 (Computer's Record) and DA Form 2188-R (Data Sheet); call for fire; forward observer's (FO's) corrections; information to complete the fire direction center (FDC) order; ammunition count; mortar platoon/section standing operating procedure (SOP); firing table; and plotting board or mortar ballistic computer (MBC).

Standards: Recorded and computed the mission. Correctly completed all required blocks and spaces on the computer's record. Recorded the information and data needed for the type of mortar and ammunition being fired at the end of each mission. Completed the data sheet.

Performance Steps

1. DA Form 2399, Computer's Record (Figure 1), is a work sheet used to record the FO's corrections, firing data, and commands to the mortars during a fire mission. He uses the computer's record for each mission received and fired by the FDC. The blocks and spaces on a computer's record and the data to be recorded are explained below. All information or data recorded on a computer's record are based on the call for fire, FDC order, or unit SOP.

Performance Steps

- phase of the mission.
- (2) MORTAR TO ADJ (mortar to adjust)—Mortar(s) that will be used during the adjustment phase of the mission. Leave blank if the mortar to adjust is the same as the mortar to fire for effect.
 - (3) METHOD OF ADJ (method of adjustment)—Number of rounds used by the adjusting mortar(s) for each correction during the adjustment phase of the mission.
 - (4) BASIS FOR CORRECTION—Point (usually the registration point) from which the correction factors to be applied are determined (surveyed chart only).
 - (5) SHEAF CORRECTION—Type of sheaf, other than parallel sheaf, that will be used during the FFE.
 - (6) SHELL AND FUSE—Shell and fuse combination that will be used for the mission. The first line is used for the ammunition that will be fired in the adjustment phase. The second line is used for the ammunition that will be fired in the FFE if it changes from the adjustment round type. If different types of ammunition will be used during the mission, the different rounds are listed—for example:
SHELL AND FUSE: high-explosive, quick (HEQ) in Adj, HEQ/white phosphorus (WP) in FFE.
 - (7) METHOD OF FFE (method of fire for effect)—Number and type rounds for each mortar in the FFE phase of the mission—for example:
METHOD OF FFE: 2 rounds HEQ, 2 round WP.
 - (8) RANGE LATERAL SPREAD—This is used with illumination with one of the following:
 - (a) Range Spread: 60-mm mortar, 250 meters between rounds; 81-mm mortar, 500 meters between rounds; and 4.2-inch and 120-mm mortars, 1,000 meters between rounds.
 - (b) Lateral Spread: 60-mm mortar, 250 meters between rounds; 81-mm mortar, 500 meters between rounds; and 4.2 inch and 120-mm mortars, 1,000 meters between rounds.
 - (c) Range/Lateral Spread: A combination of range spread and lateral spread.
 - (9) ZONE—This is used only with the 4.2-inch mortar. The zone will normally cover 100 or 200 meters. A platoon-size target would require a 100-meter zone, while a company-size target would require a 200-meter zone. Should the target require it, the 4.2-inch mortar can fire a larger zone. Zone missions fired by 60-mm, 81-mm, and 120-mm mortars are fired using searching fire.
 - (10) TIME OF OPENING FIRE—The fire control for the mission.
W/R = When ready;
AMC = At my command (either the FO or FDC).
The chief computer/section sergeant usually completes the FDC order. This area describes how the FDC will engage the target.
- m. INITIAL CHART DATA. This includes the following:
- (1) DEFLECTION—Initial deflection from the mortar position to the target being engaged.
 - (2) DEFLECTION CORRECTION—Deflection correction used for the mission.
 - (3) RANGE—Initial range from the mortar position to the target being engaged.
 - (4) VI/ALT CORRECTION—Vertical interval/altitude difference used for the mission.
 - (5) RANGE CORRECTION—Range correction factor used for the mission.
 - (6) CHARGE/RANGE—Charge and corrected range used for the mission.
 - (7) AZIMUTH—The direction from the gun position to the target.
 - (8) ANGLE T—Mil difference between the G-T line and the O-T line. (Recorded to the nearest 10 mils and transmitted to the nearest 100 mils.)
- n. INITIAL FIRE COMMAND. This is the first command that is sent to the mortar section for a mission. To complete the initial fire command, the computer must use the initial chart data, plus any corrections, and the information in the FDC order.
- (1) MORTAR TO FOLLOW (mortars to follow or FFE)—The mortar(s) to follow all commands or the mortar(s) that will be used in the FFE.
 - (2) SHELL AND FUSE—The shell and fuse combination used during the mission. If it is an adjustment mission, that is the round used during the adjustment.

Performance Steps

- (3) MORTAR TO FIRE—The number of mortar(s) being used during the adjustment phase.
 - (4) METHOD OF FIRE—The number of rounds being used for adjustment and in the FFE, and the type, if mixed. Any control by the FDC would be placed here—for example:
 - (a) One round HEQ in adjustment; two rounds HEQ/two rounds WP in FFE, AMC.
Announcing the number of rounds in the FFE gives the ammunition bearer time to prepare those rounds, such as, in the event of an immediate-suppression mission.
 - (b) Three rounds HEQ.
 - (5) DEFLECTION—The command deflection to fire the first round.
 - (6) CHARGE—The command charge needed to fire the first round.
 - (7) TIME SETTING—The time setting needed on mechanical-time fuzes (normally, illumination) to obtain the desired effects over the target area.
 - (8) ELEVATION—The elevation used for engaging the target (800, 900, and 1065 for 4.2-inch mortar; for 60-mm, 81-mm, and 120-mm mortars, it is the elevation obtained from the firing tables [FT] for the range to be fired). The elevation is also the command to fire in the absence of any type of fire control.
 - o. ROUNDS EXPENDED. A cumulative count of the number of rounds fired for the initial fire command.
 - p. OBSERVER CORRECTION. This includes the following:
 - (1) DEV (deviation)—The LEFT/RIGHT, in meters, sent in by the observer—for example: DEV: L200 = The observer wants a “left 200 meters” correction.
 - (2) RANGE—The ADD/DROP, in meters, sent in by the observer—for example: RANGE: “Add 200” is recorded as + 200, while “Drop 200” is recorded as - 200.
 - (3) TIME (HEIGHT)—The height correction the observer wants, usually used with illumination. For corrections in height, the observer will send UP/DOWN: “UP 200” or “DOWN 200” and record the same.
 - q. CHART DATA. Chart data are obtained from the M16/M19 plotting boards for the observer’s requested corrections. This section is used only when firing corrections are to be applied to the chart data to obtain firing data. (Disregard this portion of the computer’s record when using the MBC.)
 - (1) DEFL (deflection)—The deflection read from the plotting equipment before any corrections are applied.
 - (2) CHARGE (RANGE)—Chart charge (or range) is read from the plotting equipment before any corrections are applied. If a range is recorded, the charge corresponding to it may be written either in the lower part of the CHG box or in parentheses in the adjoining unused MORT FIRE box.
 - r. SUBSEQUENT COMMANDS. The command data are sent to the mortar(s) to fire the next round(s). Those commands, DEFL/CHG/ELEV, contain chart data and all firing corrections to apply. In the subsequent fire command, the only commands that are announced are any changes from the initial fire command or the previous subsequent fire command. The elevation is always given regardless of any changes.
 - (1) MORTAR TO FIRE—Self-explanatory.
 - (2) METHOD OF FIRE—The number of rounds and type of fire.
 - (3) DEFL (deflection)—The command deflection(s) to fire the round(s).
 - (4) RANGE/CHARGE—On the 4.2-inch mortar, the command charge to fire the rounds; 60-mm/81-mm/120-mm mortars: the command range used for this round(s) and the charge, if different. The range is recorded and used to determine the charge that is given to the 60-mm/81-mm/120-mm mortars (range is not given to mortars).
 - (5) TIME (SETTING)—The time setting needed for the mechanical-time fuze.
 - (6) ELEV (elevation)—The elevation used for this round(s); also, the command to fire in the absence of any fire control.
2. Data Sheet. DA Form 2188-R, Data Sheet (Figure 2), is used by the computer to record data that pertains to the mortar section or platoon and the firing data for each target engaged that may be of future value. The entries on this form are explained as follows:

Performance Steps

[illegible]

Figure 2. DA Form 2188-R

- a. **SETUP.** FDC uses this block to record the initialization data used by the firing element.
 - (1) **TIME OUT**—Amount of time selected between switch function.
 - (2) **TGT PRFX**—Target prefix used by the firing element.
 - (3) **TGT NO**—Target numbering block.
 - (4) **ALARM**—Alarm on and off function for messages.
 - (5) **MIN E/MIN N**—Minimum easting and northing coordinates from the map sheet.
 - (6) **GD**—East or west grid declination.
 - (7) **LAT**—Latitude from the map sheet.
 - (8) **LISTEN**—Allows message transmission and reception.
 - (9) **BIT RATE**—Message transmission rates for DMD-supported missions.
 - (10) **KEY TONE**—Length of time required for a communications device.
 - (11) **BLK**—Transmit block mode for DMD-supported missions.

Performance Steps

- (12) OWNER ID—Owner identification.
- b. WEAPON DATA. FDC uses this block to record the weapon initialization data used by the firing element.
 - (1) UNIT—Unit mortar element is assigned.
 - (2) __-mm CAR—Weapon type and indicates either mounted or dismounted.
 - (3) BP—Base piece number.
 - (4) E—Base piece easting map coordinate.
 - (5) N—Base piece northing map coordinate.
 - (6) ALT—altitude in meters of the base piece.
 - (7) AZ—Mils of the base piece direction of fire.
 - (8) DEF—Referred deflection used by the firing element.
 - (9) ELE—107-mm requires a selected elevation.
 - (10) WPN/DIR/DIS—Weapon number, direction, and distance from the base piece. FDC continues completing information until all weapons have been recorded for firing section.
- c. FO DATA. FDC uses this block to record the forward observer's locations.
 - (1) FO—Call sign of the forward observer.
 - (2) ALT—Altitude at the forward observer's location.
 - (3) GRID—Grid coordinates of the forward observer's location.
- d. AMMUNITION DATA. FDC uses this section to monitor the rounds. This information should be updated after each mission.
 - (1) TEMPERATURE—Current temperature.
 - (2) TYPE—Appropriate types of ammunition issued.
 - (3) LOT NUMBER—Listing of different lot numbers of the rounds and fuzes on hand.
 - (4) WEIGHT—Weight difference between types of projectiles.
 - (5) ON HAND—The number, by lot number, the firing element has on the firing position.
 - (6) RECEIVED—Number and type of rounds received.
 - (7) TOTAL—The combination of rounds on hand and those received.
 - (8) ROUNDS EXPENDED—The number of rounds expended for missions.
 - (9) ROUNDS REMAINING—The number of rounds remaining.
- e. TARGET DATA. FDC uses this section to record previously fired targets.
 - (1) TARGET ID—This includes the following:
 - (a) TGT NO (target number)—Alphanumeric identifier assigned to a target.
 - (b) GRID—Six-digit or eight-digit coordinates of a target.
 - (c) ALT—Altitude of the target.
 - (2) CHART DATA—This includes the following:
 - (a) DEFL (deflection)—Chart (M16/M19) or initial (MBC) deflection to the target.
 - (b) RG/CHG (range/charge)—Chart (M16) or initial (MBC) range and charge for the mortars needed for a target.
 - (3) FIRING CORRECTIONS—For the 4.2-inch mortar, column (1) is used to record the total deflection correction used during the mission. Columns (3) and (4) are used on the modified and surveyed charts only. This section includes:
 - (a) DEFL CORR (deflection correction)—Direction (left/right) and number of mils to apply to the chart deflection to engage the target.
 - (b) RANGE CORR (range correction)—Number and type (+/-) of meters to apply to the chart range to engage the target.
 - (c) ALT (altitude)/VI (vertical interval)—Altitude of the target and VI difference, UP (+) or DOWN (-) in meters, between the target and the mortar altitudes.
 - (d) ALT CORR (altitude correction)—For all mortars, this is the number and direction (UP/DOWN) of meters used for altitude corrections that are applied. For 4.2-inch mortars, charge correction is listed that is needed for the VI. For the 60-mm, 81-mm, and 120-mm only, corrections for deflection and range are used on the modified and surveyed charts.
 - (4) FIRING DATA—This is the base gun command data for the targets. This information contains all corrections (when used) plus chart data to get the firing data (command

Performance Steps

- data) to the center mass of the target.
 - (a) DEFL (deflection)—Command deflection to hit the center mass of the target.
 - (b) RG/CHG (range/charge)—The command range and charge to hit the target.
 - (c) FUSE TIME SETTING (fuse time setting)—Fuse/time setting on mechanical fuses recorded to the nearest 0.1 second.
 - (d) ELEV (elevation)—Elevation used to fire the round: for 4.2-inch mortars, 800, 900, or 1065; for 60-mm/81-mm/120-mm mortars, the elevation from the firing tables for the command range.
- (5) INTELLIGENCE—This includes the following:
 - (a) TIME FIRED—The time the call for fire was received.
 - (b) TGT DES (target description)—What the target was (from the call for fire on the computer's record).
 - (c) MET OF ENG (method of engagement)—How the target was engaged (number of mortars, number and type of rounds fired in the FFE).
 - (d) SUR (surveillance)—What happened to the target.
- f. ROUNDS—Rounds expended for mission and amount remaining for future missions.

Evaluation Preparation: SETUP: At the test site, provide all equipment, materials, and information given in the task condition statement.

Brief Soldier: Tell the Soldier to complete the computer's record based on information given or data determined, and to transfer the correct information and data to the data sheet.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Recorded unit and date in the heading.	_____	_____
2. Recorded firing corrections, if determined.	_____	_____
3. Correctly recorded the call for fire.	_____	_____
4. Completed the FDC order.	_____	_____
5. Determined and record initial firing data.	_____	_____
6. Recorded the FO's corrections, then compute and record subsequent data.	_____	_____
7. Recorded all rounds expended.	_____	_____
8. Recorded target surveillance.	_____	_____
9. Recorded and updated the ammunition record.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-91

Record Data Using Meteorological Data Sheet 071-076-0003

Conditions: Given DA Form 3675-R, Ballistic Message, and meteorological (MET) message.

Standards: Recorded MET message on DA Form 3675-R without error.

Performance Steps

1. Ballistic MET message.
 - a. To place fire on a target without adjustment, a mortar unit must know the exact location of the target, and compensate for all nonstandard conditions. The re-registration is the most accurate method for determining and maintaining current firing corrections, but it is not always practical. The ballistic MET message provides a means of determining the corrections necessary for changes in many of the conditions that affect the flight of rounds during the periods between registration. Those conditions include changes in powder temperature, air temperature and density, and speed and direction of the wind, assuming that all other factors remain constant until the section displaces.
 - b. The following paragraphs provide fire direction center (FDC) computers with the rules and procedures for computation of the MET message. The firing tables for the type ammunition being fired provide the MET information required. Plus (+) signs have been omitted from the firing tables; numbers without signs are considered positive.
 - c. By themselves, corrections computed from the MET message are not adequate firing corrections. To be of value to the FDC, a valid MET message must be received concurrently with a registration (within four hours). The registration corrects for all nonstandard conditions. A MET received and computed concurrently with the registration tells the FDC how much of the total registration correction is due to weather. By comparing the corrections from a later MET message, the FDC can modify the registration corrections to account for changes in weather. The use of MET corrections, therefore, eliminates the need for re-registration.
 - d. The ballistic MET message (Figure 1) has two parts: the introduction, which identifies and describes the MET station; and the body, which contains MET data. MET messages can normally be obtained from the division artillery MET station every four hours. Since MET information is normally broadcast on AM radios, it comes to the FDC through battalion headquarters.

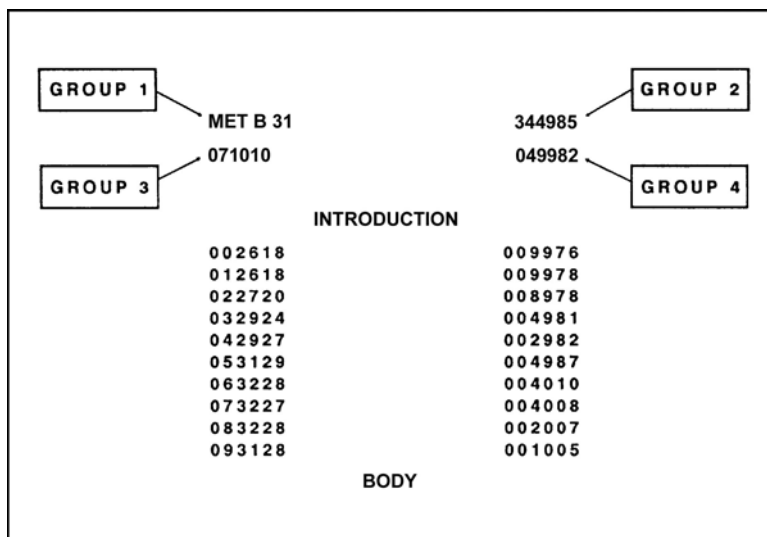


Figure 1. Ballistic MET Message Introduction

Performance Steps

2. Recording the MET message (DA Form 3675-R).

- a. Format of the MET message. The MET message is broadcast in six-character blocks as shown in Figure 2. The first 4 six-character groups are known as the introduction, and are recorded on the top line of the recording form. The rest of the message is the body (2 six-character groups compose each line of the body).
- b. Introduction. The first 4 six-character groups of the MET message identify the type of message and the station transmitting the message. The recording of the introduction on DA Form 3675-R (Figure 2) is discussed below. For a more detailed description of the meaning of each of the characters that compose the introduction, see the introduction section of the firing tables. The meaning of the characters in the introduction recorded in Figure 1 follows:
 METB 31 (Group 1): MET - Indicates that the transmission is a MET message.
 B - Indicates that it is a ballistic MET message.
 3 - Indicates that the message is for surface-to-surface fire.
 1 - Indicates the octant of the globe in which the MET message applies.

344985 (Group 2):

344 - Indicates the latitude of the center of the area of applicability expressed to the nearest tenth of a degree.

985 - Indicates the longitude of the center of the area of applicability expressed to the nearest tenth of a degree. When the longitude is 100 or greater (possible when in octant 1, 2, or 7), the initial digit 1 is omitted.

071010 (Group 3): 07 - Indicates the day of the month the period of validity of the message begins; 07 = the seventh day of the month.

101 - Indicates, to the nearest tenth of an hour in Greenwich mean time, the hour the period of validity begins.

0 - Indicates the duration of the period of validity in hours. For U.S. forces, the MET data are presumed valid until a later message is provided.

049982 (Group 4): 049 - Indicates the altitude of the MET station (also referred to as the meteorological datum plane [MDP]), recorded in tens of meters. To avoid confusion, the altitude should be written on the recording form exactly as it is received; 049 written on the sheet means 490 meters.

982 - Atmospheric pressure at the MET station. This value is not used to determine MET corrections for mortars, but it is recorded to avoid confusion in recording the message.

- c. Body. The atmosphere is divided into height zones parallel to the MDP (Figure 3). MET conditions are determined for each height zone and recorded in 2 six-digit groups. The data for each zone are numbered, beginning at 00 for the zone containing the MET station, and recorded on the line bearing the corresponding number. The data for line 03 are shown below as an example.

032924: 03 - The first two digits of any line in the body of the MET message indicate its line number. Those numbers run sequentially from 00 (surface conditions) up to 15 (18,000 meters). However, with present ammunition only lines 00 through 06 are used, since mortar projectiles never exceed the zone height corresponding to line 06. The entire MET message is recorded to reduce the chance of omitting significant data.

29 - Indicates the direction from which the ballistic wind is blowing. It is a grid azimuth expressed in hundreds of mils—for example, 29 = 2900 mils.

24 - Indicates the speed of the ballistic wind expressed to the nearest whole knot—for example, 24 = 24 knots.

004981: 004 - Indicates the ballistic air temperature expressed to the nearest 0.1 percent of standard. When the value is equal to or greater than 100, the initial digit, 1, has been omitted in transmission. The computer recording the message may add the 1 for clarity if he desires. In this example, 004 = 100.4 percent. 981 - Indicates the ballistic air density expressed to the

Performance Steps

nearest 0.1 percent of standard. As with temperature, the initial 1 is omitted in transmission when the value equals or exceeds 100.0. In this example, 981 = 98.1 percent.

BALLISTIC MESSAGE									
For use of this form, see FM 6-15; the proponent agency is TRADOC.									
IDENTIFICATION	TYPE MSG	OCTANT	LOCATION LaLaLa or xxx	LoLoLo or xxx	DATE YY	TIME (GMT) G0G0G0	DURATION (HOURS) G	STATION HEIGHT (10s M) hhh	MDP PRESSURE % OF STD PPP
METB	3	1	34H985		07	101	0	049	982
ZONE HEIGHT (METERS)		LINE NUMBER ZZ	BALLISTIC WINDS		BALLISTIC AIR				
			DIRECTION (100s MILS) dd	SPEED (KNOTS) FF	TEMPERATURE (% OF STD) TTT		DENSITY (% OF STD) ΔΔΔ		
SURFACE		00	26	18	009		976		
200		01	26	18	009		976		
500		02	27	20	008		978		
1000		03	29	24	004		981		
1500		04	29	27	002		982		
2000		05	31	29	004		987		
3000		06	32	28	004		010		
4000		07	32	27	004		008		
5000		08	32	28	002		007		
6000		09	31	28	001		005		
8000		10							
10000		11							
12000		12							
14000		13							
16000		14							
18000		15							
REMARKS									
DELIVERED TO: RECEIVED FROM:						TIME (GMT)	TIME (LST)		
MESSAGE NUMBER					DATE				
RECORDER					CHECKED				

DA FORM 3675-R, MAY 92 PREVIOUS EDITION OF THIS FORM MAY BE USED UNTIL EXHAUSTED.

Figure 2. DA Form 3675-R Ballistic Message

- d. Corrections and omissions. At the end of the transmission of a MET message, the recorder checks to see that his copy is complete. The format of the message enables the recorder to ask for a repetition of only the part he has missed, as in, "Say again introduction," or "Say again line zero four." When his copy is complete, the recorder reads back the entire message to check it for errors. If line 05 has been recorded incorrectly, the transmitting station would catch the error and report, "Wrong, line zero five: 052618 998962."

Evaluation Preparation: SETUP: At the test site, provide those items shown in the task condition statement.

Brief Soldier: Tell the Soldier to use a blank DA Form 3675-R when recording the MET message, to read the MET message as it would be given over the radio, and if he misses a portion of the message to use the proper procedure to ask for a repeat of that portion.

NOTE: For test purposes, only two lines of the body of the MET message need be given and recorded.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Recorded the MET message without error.	—	—
2. Used proper procedure when asking for a portion of the message to be given again.	—	—

NOTE: Performance measure No. 2 will not be scored if the message is recorded correctly the first time it is given.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

DA FORM 3675-R

Related

FM 23-91
FM 6-15
FT 4.2-H-2
FT 4.2-K-2
FT 60-P-1
FT 81-AI-3

Compute Meteorological Firing Corrections

071-076-0004

Conditions: Given a blank DA Form 2601-1 (MET Data Correction Sheet for Mortars), completed DA Form 3675-R (Ballistic Message), firing table, overprinted DA Form 2601-1 (Figure 1), projectile weight (4.2-inch only), powder temperature, and meteorological (MET) corrections from a previous MET message.

Standards: Computed MET data corrections to apply to the nearest mil for deflection and meter for range.

Performance Steps

1. Compute MET corrections.
 - a. To place effective fire on a target without adjustment, a mortar unit must know the exact location of the target and compensate for all nonstandard conditions. The re-registration is the most accurate method for determining and maintaining firing corrections, but it is not always practical. The ballistic MET message provides a means of determining the corrections necessary for changes in many of the conditions that affect the flight of rounds during the periods between registrations. Those conditions include changes in powder temperature, air temperature and air density, and the speed and direction of the wind.
 - b. By themselves, corrections computed from the MET message are not adequate firing corrections. To be of value to the fire direction center (FDC), a valid MET message must be received concurrently with a registration (within four hours). The registration corrects for all nonstandard conditions. A MET message received and computed concurrently with the registration tells the FDC how much of the total registration correction is due to weather. By comparing the corrections from a later MET message, the FDC can modify the registration corrections to account for changes in weather. The use of MET corrections, therefore, eliminates the need for re-registration.
 - c. The following paragraphs provide FDC computers with the rules and procedures for computation of the MET message. The firing tables for the type of ammunition being fired provide the MET information required. Plus (+) signs have been omitted from the firing tables; numbers without signs are considered positive.

NOTE: The tables used in this task are from the 81-mm mortar firing table (FT 81-AI-3). However, the procedures used in this task apply to all mortars.

2. Completion of DA Form 2601-2-R (Figure 1).

NOTE: The DA Form 2601-1 in Figure 1 has been overprinted with information on where to find required data, and how to determine and compute MET data.

- a. Known data. Known data are those available to the FDC before the receipt of a MET message. They are collected by the computers and recorded in the proper spaces on the MET data correction sheet. Known data consist of the following items:
 - (1) Charge. This is the most current charge on the data sheet for the registration point (RP). This charge determines which line of the firing tables is consulted to determine the correction factors to be used, and which line of the MET message to use. The line number to use for the MET message can also be recorded before the MET message is received. To do so, enter the firing tables in the following ways:
 - (a) For the 4.2-inch mortar, at the elevation used during the registration: go to column 2 and find the command charge, then go to column 6. The number at that charge in column 6 is the line number.
 - (b) For the 60-mm, 81-mm, or 120-mm mortar, at the command charge, go to column 1 (range) and find the command range, then go to column 5. The number at that range in column 5 is the line number.
 - (c) Once the MET message has been received and recorded, the introduction and the information from the line number being used is then recorded on DA Form 2601-1.

Performance Steps

- (2) Chart range. This is for applying MET corrections. The range used becomes the command range. This is the range that was used to hit the RP.
- (3) Elevation. The elevation is used to determine the adjusted charge; corrections are taken from the same section of the firing tables.

MET DATA CORRECTION SHEET 6400 MILS (MORTARS)										
For use of this form, see FM 23-91; the proponent agency is TRADOC.										
FIRING DATA			MET MESSAGE							
CHARGE 4	CHART RANGE 1811	ELEVATION 1178	TYPE 3	STATION 344983	DATE 12					
ALTITUDE OF MORTARS (M) 460			TIME	ALT MDP 370	LINE NUMBER 3					
ALTITUDE OF MDP 370			WIND DIRECTION 2400	WIND VELOCITY 19	AIR TEMP 103.7	AIR DENSITY 96.5				
SECTION ABOVE + MDP Δ H 90			Δ H CORRECTIONS		Δ T 0.2	Δ P 0.9				
			CORRECTED VALUES		103.7	96.5				
WIND COMPONENTS										
WHEN DIRECTION OF WIND IS LESS THAN DIRECTION OF FIRE ADD 6400										
DIRECTION OF WIND 2400										
TOTAL 8800										
DIRECTION OF FIRE 4800										
CHART DIRECTION OF WIND (6400 IS LESS THAN CORRESPONDING DIRECTIONAL VARIATION TO CHECK POINTS) 4800										
DIRECTIONAL VARIATION TO CHECK POINTS			I (RP)	II	III	IV	V	VI	VII	VIII
CHART WIND TO CHECK POINTS			4000	4000	4000	4000	4000	4000	4000	4000
			0800	1600	2400	3200	4000	4800	5600	6400
DEFLECTION CORRECTIONS										
WIND VELOCITY (KNOTS)			19	19	19	19	19	19	19	19
CROSS WIND COMPONENT			0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
CROSS WIND			13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
CROSS WIND CORRECTION FACTOR			1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
DEFLECTION CORRECTION			19	19	19	19	19	19	19	19
RANGE CORRECTIONS										
WIND VELOCITY (KNOTS)			19	19	19	19	19	19	19	19
RANGE WIND COMPONENT			0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
RANGE WIND			13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
RANGE WIND UNIT CORRECTION			-2.9	-2.9	-2.9	0	3.8	3.8	3.8	0
RANGE WIND CORRECTION			39	39	39	0	51	51	51	0
			39	39	39	0	51	51	51	0
POWDER TEMP 77°F $\Delta T = -0.3$			STANDARD VALUES		VARIATION FROM STANDARD		UNIT CORRECTIONS		PLUS	MINUS
AIR TEMP 103.7			100		3.7		-0.1		-0.1	5
AIR DENSITY 96.5			100		3.5		-37			13
PROJECTILE WT NOT COMPUTED FOR 81MM MORTARS										
ABSOLUTE REGISTRATION CORRECTIONS										
REGISTRATION CORRECTION 125										
RP MET CORRECTION 60										
ABSOLUTE REG. CORRECTION 65										
DIRECTIONAL CORRECTIONS										
			I (RP)	II	III	IV	V	VI	VII	VIII
BALLISTIC RANGE CORR.			18	18	18	18	18	18	18	18
RANGE WIND CORRECTION			39	55	39	0	51	72	51	0
TOTAL RANGE CORRECTION			60	70	60	20	30	50	30	20
MET CORRECTION			60	70	60	20	30	50	30	20
ABSOLUTE REG. CORRECTION			65	75	65	25	35	55	35	25
CORRECTIONS TO APPLY			5	39	5	30	5	30	5	30

DA Form 2601-2-R, 1 OCT 71

Figure 1. Overprinted MET Data Correction Sheet for Mortars

- (4) Direction of fire. This is for use with the MET data and is measured to the plotted location of the RP, and then rounded to the nearest 100 mils. It is measured using a surveyed chart. It may also be read from the mounting information at the top of the data sheet.

Performance Steps

- (5) Altitude. The altitude of the firing section is read from the data sheet, rounded to the nearest 10 meters, and recorded in the proper box.
- (6) Powder temperature. The temperature of the ammunition propellant at the section is measured to the nearest degree Fahrenheit. If the propellant temperature cannot be determined, air temperature can be substituted.
- (7) Weight of projectile (4.2-inch mortar). This is the weight of the ammunition used during the registration mission. The weight is expressed in squares, and two squares (2 squares) has been set as the standard. If the section has different types of ammunition, the same weight projectile should be used during the registration.

NOTE: The new 4.2-inch ammunition does not use squares of weight.

- b. Computation. Once the known data have been recorded on the MET data correction sheet, the transmission of the MET message is awaited. The computation of the MET corrections is quicker and more accurate if the computer has organized his thoughts and data before the message is received. Figure 1 shows a MET data correction sheet that indicates the sources, movements, and precision of the data recorded on the sheet. The following is a guide for organizing MET computations:
 - (1) Record any known, previously unrecorded data in the proper spaces before receipt of the MET message.
 - (2) Enter the proper subsection of the firing tables at the charge and command range (Table D); read across to find which line of the MET message to use.
 - (3) After the MET message is received and recorded on DA Form 3675-R, extract the information contained in the introduction of the message in the line of the body determined above. Record this information in the proper spaces of the MET data correction sheet.
 - (4) Compute corrected values for air temperature and density, determine the chart direction of the wind and corresponding wind components, and compute the deflection correction.
 - (5) Compute the MET range correction.
 - (6) Round the corrections for deflection and range to the nearest mil and meter, respectively, and record them in THIS MESSAGE box at the bottom to determine the correction to apply.
- c. Example. The following known data are used to compute corrections:
 - Adjusted range — 2,910;
 - Charge — 17.5;
 - Elevation — 900;
 - Direction of fire — 4,300;
 - Section altitude — 460;
 - Ammunition — M374A2;
 - Propellant temperature — 60 degrees F.
- d. Procedures for using DA Form 2601-1 to compute MET corrections are as follows:
 - (1) Known data. Record all known data in the spaces provided.
 - (2) Determination of line number (Figure 5). Enter the firing tables at the section for the elevation or charge and search down column 1 until the adjusted range (2,600) is found. Read across to column 5 to determine the line number of the MET message to use (in this case, 4).
 - (3) MET values. Record the data from the introduction and the appropriate line (04) of the MET message in the proper spaces on DA Form 2601-1 (Figure 2). For brevity, the location of the MET station should remain as it appears in the MET message. All other data should be changed from 030 to 300; wind direction, from 25 to 2500. Values for the altitude of the MET station wind direction, and wind speed are used in other sections of the sheet, and should be recorded now in these other sections.

Figure 2. Example of Completed MET Data Correction Sheet for Mortars

Performance Steps

- (4) Temperature and density corrections. Determine DELTA H and corrected values for air temperature and density. DELTA H is the difference in altitude between the mortar section and the meteorological datum plane (MDP). The sign is plus (+) if the section is above the MDP and minus (-) if it is below:

Altitude of the MDP — 300,

- Altitude of mortars — 210,

DELTA H — -90 (Section below MDP)

CHARGE

6

TABLE B

.FT 81-A1-3

TEMPERATURE AND DENSITY CORRECTIONS

CTG. HE. M374A2

FUZE. PD. M567

CORRECTIONS TO TEMPERATURE (DT) AND DENSITY (DD), IN PERCENT,
TO COMPENSATE FOR THE DIFFERENCE IN ALTITUDE,
IN METERS, BETWEEN THE BATTERY AND THE MDP

DH		0	-10	-20	-30	-40	-50	-60	-70	-80	-90
0	DT	-0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2
	DD	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
+100	DT	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4
	DD	-1.0	-1.1	-1.2	-1.3	-1.4	-1.5	-1.6	-1.7	-1.8	-1.9
+200	DT	-0.5	-0.5	-0.5	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7
	DD	-2.0	-2.1	-2.2	-2.3	-2.4	-2.5	-2.6	-2.7	-2.8	-2.9
+300	DT	-0.7	-0.7	-0.7	-0.8	-0.8	-0.8	-0.8	-0.9	-0.9	-0.9
	DD	-3.0	-3.1	-3.2	-3.3	-3.4	-3.5	-3.6	-3.7	-3.8	-3.9

NOTES

1 DH IS BATTERY HEIGHT ABOVE OR BELOW THE MDP

2 IF ABOVE THE MDP, USE THE SIGN BEFORE THE NUMBER

3 IF BELOW THE MDP, USE THE SIGN AFTER THE NUMBER

Figure 3. Temperature and Density Corrections Table

NOTE: The DELTA H must always be converted to hundreds to enter Table B (Figure 3).

EXAMPLE: DELTA H = 150 = 1.50;

1. = hundreds (left-hand column of table);

.50 = tenths (across top of Table B)

In the task, DELTA H is -90. This is converted to -0.90 to enter Table B.

The DELTA H corrections modify the values of air temperature and density determined at the MET station to what they would be at the mortar section. The value for DELTA H is used to locate the appropriate corrections in Table B (Figure 3). Corrections for air temperature (DELTA T) and air density (DELTA D) are arranged in four double rows in the table. The numbers 0, +10-, through +90- across the top represent DELTA H in tens of meters. Where the proper hundreds row crosses the proper tens column, the corrections are found. The numerical sign of the corrections are found where the 0 row crosses the +90- column. The sign of DELTA H is minus, making the corrections plus: DELTA T is +0.2 and DELTA D is +0.9. Enter these in the spaces provided on the form, and determine the corrected values for temperature and density (Figure 2).

- (5) Wind components. The wind direction should already have been entered in the proper space, and also the direction of fire. (If the direction of fire is larger than the direction of the wind, add 6400 to the latter (4300 is larger than 2900; 2900 + 6400 = 9300). Subtract the direction of fire; the result is the chart direction of the wind (9300 - 4300 = 5000). In this message, the direction of fire is less than the direction of the wind (2500 - 1400 = 1100). Enter Table A (Figure 4) and find the chart direction of the wind. Read across that row to find the crosswind and range wind components (RIGHT.88 and HEAD.47). Copy them in the proper spaces (Figure 2). Multiply the components by the wind speed to get lateral wind and range wind. The crosswind (16 x .88 = R14.1) is

Performance Steps

multiplied by the correction factor corresponding to the adjusted range (2,600) taken from Table D (basic data), column 7 (1.4, Figure 5) to get the deflection correction ($R14.1 \times 1.4 = R19.1$, which rounds to R20). The result is moved to the bottom and placed in the THIS MESSAGE space (Figure 2) for deflection correction.

TABLE A

FT 81-A1-3

WIND COMPONENTS

CHARGE

6

CTG. HE, M374A2

FUZE. PD, M567

COMPONENTS OF A ONE KNOT WIND

CHART DIRECTION OF WIND	CROSS WIND	RANGE WIND
MIL	KNOT	KNOT
0	0	H1.00
100	R.10	H.99
200	R.20	H.98
300	R.29	H.96
400	R.38	H.92
500	R.47	H.88
600	R.56	H.83
700	R.63	H.77
800	R.71	H.71
900	R.77	H.63
1000	R.83	H.56
1100	R.88	H.47
1200	R.92	H.38
1300	R.96	H.29
1400	R.98	H.20
1500	R.99	H.10
1600	R1.00	0
1700	R.99	T.10
1800	R.98	T.20
1900	R.96	T.29
2000	R.92	T.38
2100	R.88	T.47
2200	R.83	T.56
2300	R.77	T.63
2400	R.71	T.71
2500	R.63	T.77
2600	R.56	T.83
2700	R.47	T.88
2800	R.38	T.92
2900	R.29	T.96
3000	R.20	T.98
3100	R.10	T.99
3200	0	T1.00

CHART DIRECTION OF WIND	CROSS WIND	RANGE WIND
MIL	KNOT	KNOT
3200	0	T1.00
3300	L.10	T.99
3400	L.20	T.98
3500	L.29	T.96
3600	L.38	T.92
3700	L.47	T.88
3800	L.56	T.83
3900	L.63	T.77
4000	L.71	T.71
4100	L.77	T.63
4200	L.83	T.56
4300	L.88	T.47
4400	L.92	T.38
4500	L.96	T.29
4600	L.98	T.20
4700	L.99	T.10
4800	L1.00	0
4900	L.99	H.10
5000	L.98	H.20
5100	L.96	H.29
5200	L.92	H.38
5300	L.88	H.47
5400	L.83	H.56
5500	L.77	H.63
5600	L.71	H.71
5700	L.63	H.77
5800	L.56	H.83
5900	L.47	H.88
6000	L.38	H.92
6100	L.29	H.96
6200	L.20	H.98
6300	L.10	H.99
6400	0	H1.00

Figure 4. Winds Components Table

Performance Steps

FT 81-AI-3 CTG. HE, M374A2 FUZE, PD, M567			TABLE D BASIC DATA			CHARGE 6
1	2	3	4	5	6	7
R A N G E	E L E V	D ELEV PER 100 M DR	APPROX NO. OF TURNS PER 100 M DR	LINE NO.	TIME OF FLIGHT	AZIMUTH CORRECTION CW OF 1 KNOT
M	MIL	MIL	NO.	NO.	SEC	MIL
2200	1235	21	2	4	36.7	1.7
2225	1229	21	2	4	36.7	1.7
2250	1224	21	2	4	36.6	1.7
2275	1219	21	2	4	36.5	1.6
2300	1214	22	2	4	36.4	1.6
2325	1208	22	2	4	36.4	1.6
2350	1203	22	2	4	36.3	1.6
2375	1197	22	2	4	36.2	1.6
2400	1192	22	2	4	36.1	1.6
2425	1186	23	2	4	36.0	1.5
2450	1180	23	2	4	35.9	1.5
2475	1174	23	2	4	35.9	1.5
2500	1169	24	2	4	35.8	1.5
2525	1163	24	2	4	35.7	1.5
2550	1157	24	2	4	35.6	1.5
2575	1151	25	2	4	35.5	1.4
→ 2600	1144	25	2	4	35.4	1.4
2625	1138	25	3	4	35.3	1.4
2650	1132	26	3	4	35.2	1.4
2675	1125	26	3	4	35.1	1.4
2700	1119	27	3	4	35.0	1.4
2725	1112	27	3	4	34.8	1.3
2750	1105	28	3	4	34.7	1.3
2775	1098	28	3	4	34.6	1.3
2800	1091	29	3	4	34.5	1.3
2825	1084	29	3	4	34.4	1.3
2850	1076	30	3	4	34.2	1.3
2875	1069	31	3	4	34.1	1.2
2900	1061	31	3	4	33.9	1.2
2925	1053	32	3	4	33.8	1.2
2950	1045	33	3	4	33.6	1.2
2975	1037	34	3	4	33.5	1.2
3000	1028	35	4	4	33.3	1.2

Figure 5. Basic Data Table

- (6) Range correction. All known values should already be written in the proper spaces except DELTA V, which are found as follows. The computer enters Table C (Figure 6) and finds the temperature closest to that recorded for the propellant (it may be either Fahrenheit or Celsius). Variation in velocity appears in the center column on the same line as the temperature. The computer now determines the amount by which these known values vary from the standard values upon which the firing tables are based. The variations from standard must be multiplied by correction factors from Table D (Figure 7) to convert them to range correction in meters. Enter Table D on the line corresponding to the adjusted range and find the correction factors for each variation from standard.

Performance Steps

Enter the factor with its sign on the MET sheet. Multiply the variation from standard by the correction factor, and place the result (rounded to the nearest whole meter) in the column with the same sign as the correction factor. When all of the corrections have been multiplied, add the two columns and determine the MET correction (+33 in the example). Determine the result to the nearest meter and write it in the range box for THIS MESSAGE.

FT 81-AI 3		TABLE C	CHARGE
CTG. HE. M374A2		PROPELLANT TEMPERATURE	6
FUZE. PD. M567			
VARIATIONS IN MUZZLE VELOCITY DUE TO PROPELLANT TEMPERATURE			
TEMPERATURE OF PROPELLANT	VARIATION IN VELOCITY	TEMPERATURE OF PROPELLANT	
DEGREES F	M S	DEGREES C	
-40	.7 6	-40.0	
-35	.7 2	-37.2	
-30	.6 8	-34.4	
-25	.6 4	-31.7	
-20	6 0	-28.9	
-15	5 6	-26.1	
-10	5 2	-23.3	
5	4 9	-20.6	
0	4 5	-17.8	
5	4 1	-15.0	
10	3 8	-12.2	
15	3 4	-9.4	
20	3 1	-6.7	
25	2 7	-3.9	
30	2 4	1 1	
35	2 1	1 7	
40	1 8	4 4	
45	1 5	7 2	
50	1 2	10 0	
→ 55	0 9	12 8	
60	0 6	15 6	
65	0 3	18 3	
70	0 0	21 1	
75	0 3	23 9	
80	0 5	26 7	
85	0 8	29 4	
90	1 1	32 2	
95	1 3	35 0	
100	1 5	37 8	
105	1 8	40 6	
110	2 0	43 3	
115	2 2	46 1	
120	2 4	48 9	
125	2 6	51 7	
130	2 8	54 4	

Figure 6. Propellant Temperature Table

Performance Steps

FT 81-AI-3		TABLE D								CHARGE		
CTG. HE, M374A2		CORRECTION FACTORS								6		
FUZE, PD, M567												
1	8	9	10	11	12	13	14	15				
R A N G E	RANGE CORRECTIONS FOR											
	MUZZLE VELOCITY 1 M/S		RANGE WIND 1 KNOT		AIR TEMP 1 PCT		AIR DENSITY 1 PCT					
	DEC	INC	HEAD	TAIL	DEC	INC	INC	DEC				
M	M	M	M	M	M	M	M	M				
2200	16.9	-14.7	5.3	-4.3	0.1	0.0	-5.8	5.7				
2225	17.1	-14.9	5.4	-4.3	0.1	0.0	-5.8	5.8				
2250	17.2	-15.0	5.4	-4.3	0.1	0.0	-5.9	5.9				
2275	17.4	-15.2	5.4	-4.3	0.1	0.0	-6.0	5.9				
2300	17.6	-15.4	5.4	-4.3	0.1	0.0	-6.0	6.0				
2325	17.8	-15.5	5.4	-4.4	0.1	0.0	-6.1	6.1				
2350	18.0	-15.7	5.4	-4.4	0.1	0.0	-6.2	6.1				
2375	18.2	-15.9	5.4	-4.4	0.1	0.0	-6.2	6.2				
2400	18.4	-16.0	5.5	-4.4	0.1	0.0	-6.3	6.3				
2425	18.6	-16.2	5.5	-4.4	0.1	0.0	-6.4	6.3				
2450	18.7	-16.4	5.5	-4.5	0.1	0.0	-6.4	6.4				
2475	18.9	-16.5	5.5	-4.5	0.1	0.0	-6.5	6.5				
2500	19.1	-16.7	5.5	-4.5	0.1	0.0	-6.6	6.6				
2525	19.3	-16.8	5.5	-4.5	0.1	0.0	-6.6	6.6				
2550	19.5	-17.0	5.5	-4.5	0.1	0.0	-6.7	6.7				
2575	19.7	-17.2	5.5	-4.5	0.1	0.0	-6.8	6.8				
→ 2600	19.9	-17.3	5.5	-4.6	0.1	0.0	-6.9	6.8				
2625	20.1	-17.5	5.5	-4.6	0.1	0.0	-6.9	6.9				
2650	20.2	-17.7	5.6	-4.6	0.1	0.0	-7.0	7.0				
2675	20.4	-17.8	5.6	-4.6	0.1	0.0	-7.1	7.0				
2700	20.6	-18.0	5.6	-4.6	0.1	0.0	-7.1	7.1				
2725	20.8	-18.1	5.6	-4.6	0.1	0.0	-7.2	7.2				
2750	21.0	-18.3	5.6	-4.7	0.1	0.0	-7.3	7.2				
2775	21.2	-18.5	5.6	-4.7	0.1	0.0	-7.3	7.3				
2800	21.4	-18.6	5.6	-4.7	0.1	0.0	-7.4	7.3				
2825	21.6	-18.8	5.6	-4.7	0.1	0.0	-7.5	7.4				
2850	21.8	-19.0	5.6	-4.7	0.1	0.0	-7.5	7.5				
2875	22.0	-19.1	5.5	-4.7	0.1	0.0	-7.6	7.5				
2900	22.1	-19.3	5.5	-4.8	0.1	0.0	-7.7	7.6				
2925	22.3	-19.5	5.5	-4.8	0.1	0.0	-7.7	7.7				
2950	22.5	-19.6	5.5	-4.8	0.1	0.0	-7.8	7.7				
2975	22.7	-19.8	5.5	-4.8	0.1	0.0	-7.9	7.8				
3000	22.9	-19.9	5.5	-4.8	0.1	0.0	-7.9	7.8				

Figure 7. Correction Factors Table

- (7) MET correction. This is the contribution of MET factors at the time the MET was computed in the amount recorded by THIS MESSAGE, here R20, +33. The change in the deflection correction is expressed as the direction and number of mils change from the concurrent MET (R20) to the first subsequent MET (R8). The horizontal scale of Figure 8 illustrates a convenient method for determining the difference, in this case, LEFT 12. The range change is the difference between the range correction for the concurrent MET (+33) and that for the subsequent MET (+66). The vertical scale of Figure 8 shows how to determine the range correction; here, +33. The completed MET CORR TO APPLY section would look like Table 1.

Performance Steps

The method of determining the correction to apply (L12, +33) to the data from the registration is recorded on the data sheet. If several hours later another MET is received and calculated (call this the second subsequent MET), the corrections to apply would be calculated by finding the changes in deflection and range corrections between the first subsequent MET (which is now in the LAST MESSAGE box) and the second subsequent MET, using exactly the same method as before.

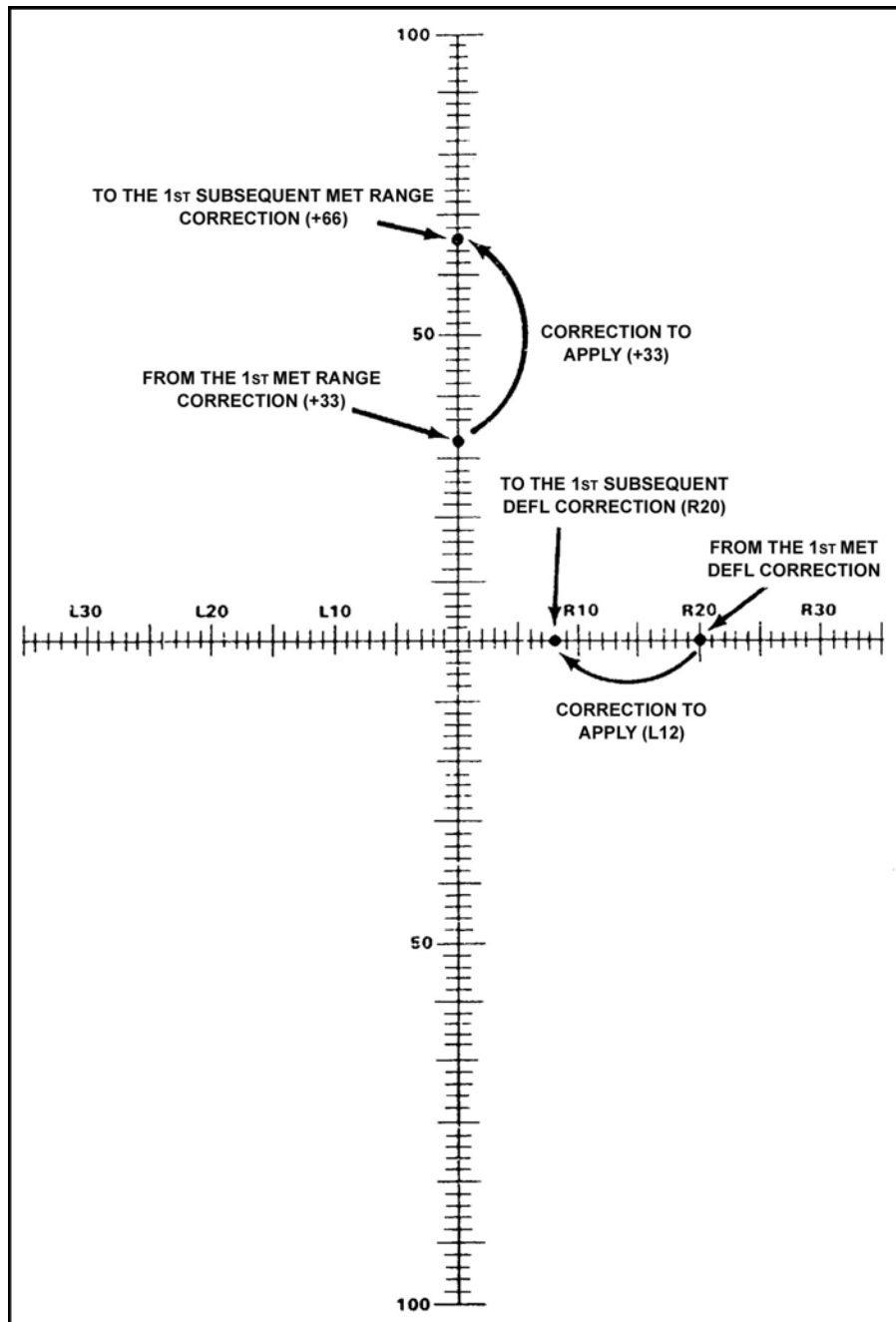


Figure 8. MET Cross

Performance Steps

	DEFLECTION	RANGE
	L	(+)
LAST MESSAGE	20	33
	(R)	-
<hr/>		
	L	(+)
THIS MESSAGE	8	66
	(R)	-
<hr/>		
	(L)	(+)
CORR TO APPLY	12	33
	R	-

Table 1. MET Correction to Apply

3. Determination and application of MET firing corrections.
 - a. Deflection correction. The deflection correction recorded on the data sheet from the registration was R23. The correction determined from the MET messages was L12. To determine the new deflection correction, add the two figures as follows: Deflection correction — R(-)23;
MET range correction — L(+)12;
New deflection correction — R(-)11
 - b. Range correction factor. To determine the new range correction factor (RCF), use the correction taken from the data sheet and the MET correction, and add these two figures as follows:
(RP range correction +100) + (MET range correction + 33) = (New range correction +133).
From the new range correction, the new RCF is determined as follows:
(Range correction = +133), (Chart range (in thousands) = 2.4), $133/2.4 = 55.4 = +55$ RCF
These new corrections are now recorded on the data sheet and used to fire new targets.
 - c. Firing data. After the new firing corrections have been determined and as time permits, it is possible to update firing data for all plotted and previously fired targets. The procedures for updating target information are exactly the same as the re-registration corrections.

Evaluation Preparation: SETUP: At the test site, provide all materials and information given in the task condition statement; provide pencils and paper.

Brief Soldier: Tell the Soldier to compute the MET corrections for the MET message given him; then to determine the correction to apply when using the MET corrections just determined, and the corrections determined from a previous MET message.

NOTE: If the requirements cannot be accomplished within 20 minutes, assume that the Soldier cannot pass the task, and give him a NO-GO.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Determined the MET corrections based on the MET message without error.	_____	_____
2. Compared the MET corrections from both MET messages and determined the MET corrections to apply to the registration correction when determining new firing corrections.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

DA FORM 2601-1
DA FORM 3675-R
FT 81-AI-3

Related

FM 23-91

Apply No-Fire Data to a Plotting Board
071-076-0008

Conditions: Given a plotting board or firing chart prepared for, or in, operation (surveyed chart); fire direction center (FDC) kit for the type mortar being fired; and no-fire restrictions (overlays, grids, notes or other form, which accurately prescribes location, times and/other fire restricting information).

Standards: The application of no-fire data provided the FDC with accurate information, which when properly used, resulted in the designated area being free of mortar fire during the prescribed period of time.

Performance Steps

NOTE: In the following steps, the term “chart” is used in lieu of “plotting board/firing chart”—as in surveyed, observed, or modified observed chart.

- 1. Superimpose boundaries onto the plotting board/firing chart.
 - a. Lines were constructed on the chart, which graphically portrayed the limits of the restricted area(s).
- 2. Enter applicable information.
 - a. The restricted areas were identified and/or labeled with sufficient information so as to make them easily identified, and all related firing limitations understood.
- 3. Determine firing data, which will avoid impact within restricted areas.

NOTE: Any fire request, which may impact within a restricted area, is denied in a message to observer and/or reported to the chain of command.

Evaluation Preparation: SETUP: At the test site, provide the Soldier with all the equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to apply the no-fire data to a plotting board.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Superimposed boundaries onto the plotting board/firing chart.	_____	_____
2. Entered information.	_____	_____
3. Determined firing data, which will avoid impact within restricted areas.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	FM 23-91

Compute Angle T

071-076-0010

Conditions: As a computer, given the observer target (OT) direction, direction of fire, No. 2 pencils, and paper.

Standards: 1. Determined angle T to the nearest mil.

2. Recorded to the nearest 10 mils.

3. Notified forward observer (FO) in the message to observer (MTO) when angle T exceeds 500 mils or when angle T is requested by the FO.

Performance Steps

1. Angle T is the difference in mils (angle) between the OT direction and gun-to-target (G-T) direction (Figure 1).

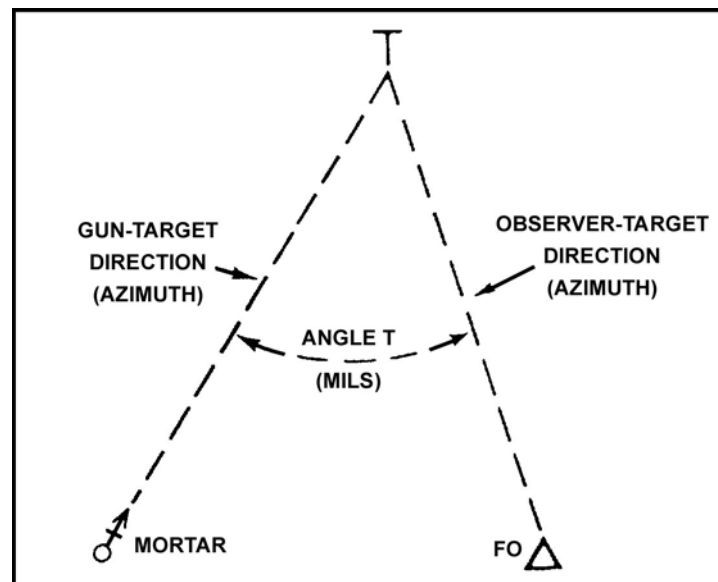


Figure 1. Angle T

2. Angle T becomes significant when it reaches 500 mils. At that point, range changes, with respect to the G-T line, begin to appear as deviation changes to the FO. It is an uncorrectable ballistic characteristic of mortars that range probable error (the statistical uncertainty as to exactly where along the G-T line the round will impact) is fairly large. A round could easily land 25 meters over or short of a target when firing the same data. Deviation probable error is small by comparison. When angle T is over 500 mils, range probable errors begin to appear as deviations to the FO. He is, therefore, informed by the fire direction center (FDC) when angle T is between 500 and 2700 mils (Figure 2).

Performance Steps

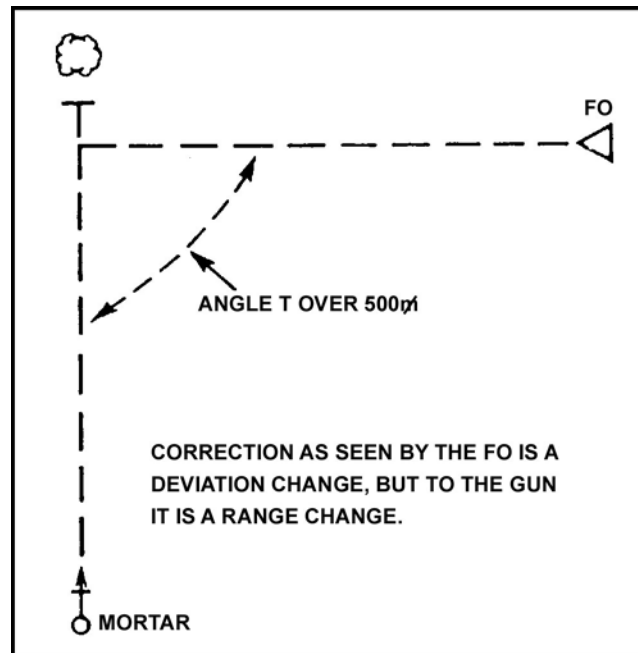


Figure 2. Angle T

3. The FDC informs the FO that the angle T exceeds 500 mils. The FO then uses a different method to determine the deviation (left, right) correction. When the FO has been told that angle T is over 500 mils, his initial action is to continue to use his OT factor to make his deviation corrections. However, if he observes that he is getting much more of a correction than he asked for, he should consider cutting his corrections proportionately and continuing the mission.
4. To compute angle T, the FDC must have the OT direction (taken from the call for fire), and the G-T direction (taken from the plotting board).
 EXAMPLE A:
 $4100 \text{ mils (OT direction)} - 3500 \text{ mils (G-T direction)} = 600 \text{ mils (angle T)}$.
 The angle T is between 500 and 2700 mils, so the FO is notified, "angle T is over five hundred."
 EXAMPLE B:
 $6000 \text{ mils (OT direction)} - 0100 \text{ mils (G-T direction)} = 5900 \text{ mils}$.
 Result is greater than 3200, so subtract from 6400.
 $6400 \text{ mils} - 5900 \text{ mils} = 500 \text{ mils (actual angle T)}$.
 The angle T does not exceed 500 mils. The FO is not notified. Angle T is significant only when it is between 500 and 2700 mils (Figure 3).

Performance Steps

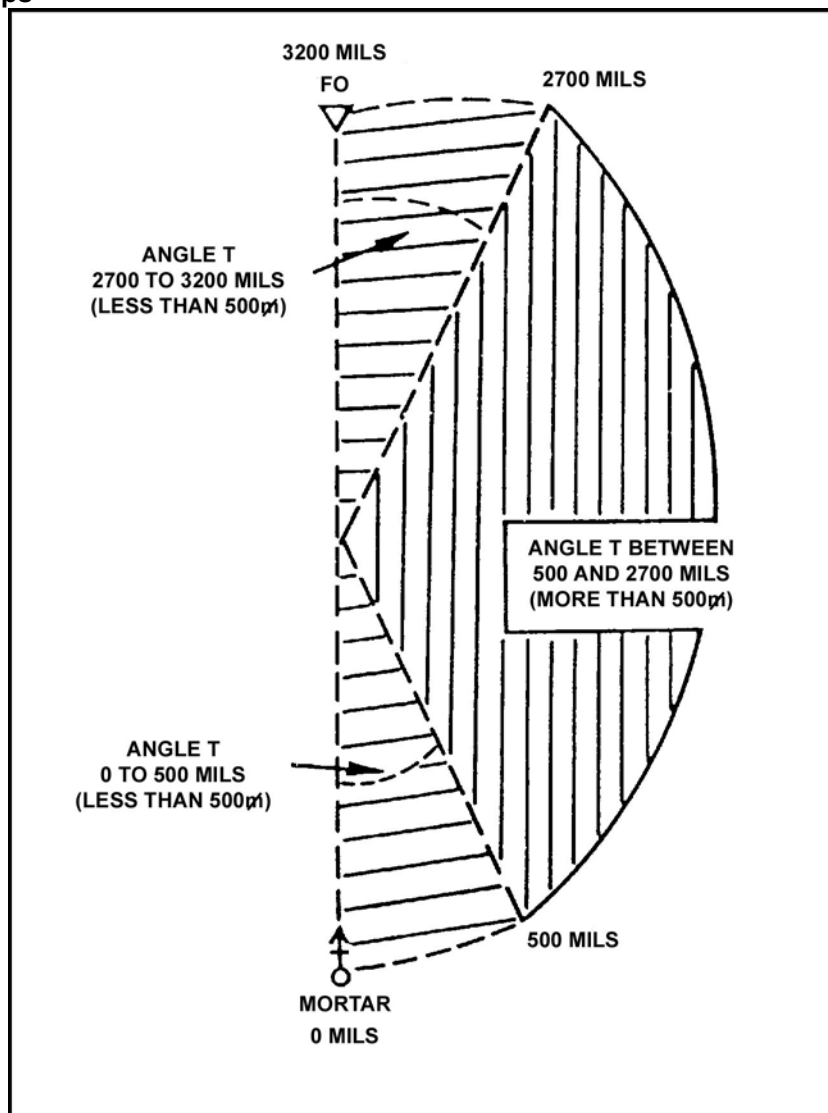


Figure 3. Angle T

5. Although the angle T is of no use to the FDC, it is of great importance to the FO. Angle T must be determined to the nearest mil and recorded on the computer's record to the nearest 10 mils. If the FO requests the angle T, it is given to the nearest 100 mils.

Evaluation Preparation: SETUP: At the test site, provide the equipment and information given in the task condition statement. Also, provide the following information:

1. Problem one: One OT azimuth between 0 and 1600, and one G-T azimuth between 4800 and 0.
2. Problem two: One OT azimuth between 0 and 1600, and one G-T azimuth between 1600 and 3200.
3. Problem three: One OT azimuth between 3200 and 4800, and one G-T azimuth between 4800 and 0.

Brief Soldier: Tell the Soldier to determine the angle T for each of the three problems. The Soldier may place the data on the plotting board and determine the angle T, or use paper and pencil. Tell the Soldier to answer questions pertaining to angle T.

Performance Measures**GO** **NO GO**

1. Determined the correct angle T for problem one (to 1 mil). — —

2. Determined the correct angle T for problem two (to 1 mil). — —

3. Determined the correct angle T for problem three (to 1 mil). — —

NOTE: Soldier must give correct answers to the following questions. Answers follow in parentheses.

4. To what number of mils is angle T recorded on the computer's record? (nearest 10 mils) — —

5. When is the FO informed about angle T? (when over 500 mils) — —

6. Of what use is the angle T to the FDC? (none) — —

7. When would the FDC inform the FO of the actual angle T when it is less than 500 mils? (only when the FO requested angle T) — —

8. If the FO requested angle T, to what number of mils is it given? (nearest 100 mils) — —

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-91

Use Mortar Firing Tables

071-321-4011

Conditions: As a computer or squad leader, given a firing table (abridged or unabridged) pertaining to the type mortar and ammunition being used, computer's record, pencil, type of ammunition, and range to target.

Standards: Within one minute, determine the data required for a given range to include at least, for the 60-mm/81-mm/120-mm mortar, charge, elevation, and time of flight. For the 4.2-inch mortar, determine elevation (with or without extension), charge, and time of flight.

Performance Steps

1. The firing tables for mortars are printed in two forms—abridged and unabridged. The abridged firing table is printed on a waxed card and is packed in ammunition boxes. It contains the minimum information needed to fire a round.
 - a. The abridged firing table contains columns for range, charge, and elevation (Figure 1). This information overlaps, so that for most ranges listed, there are two charges and elevations given.

CARTRIDGE, HE, M3742 FUZE, PD, M52448												FF 81-AJ-2 (ABRIDGED)												CARTRIDGE, HE, M3742 FUZE, PD, M52448											
RANGE M	ELEV MILS	CHG M	ELEV MILS	CHG M	RANGE M	ELEV MILS	CHG M	ELEV MILS	CHG M	RANGE M	ELEV MILS	CHG M	ELEV MILS	CHG M	RANGE M	ELEV MILS	CHG M	ELEV MILS	CHG M	RANGE M	ELEV MILS	CHG M	ELEV MILS	CHG M											
15	1504	282	0		1000	1278	693	2	928	338	1	1900	1146	1090	4	941	633	3	2800	1091	1449	6	934	1025	5										
100	1472	200	0		1025	1237	667	2	867	307	1	1925	1137	1081	4	917	660	3	2850	1076	1427	6	899	973	5										
125	1458	196	0		1050	1203	661	2				1950	1128	1072	4	888	631	3	2900	1061	1404	6	832	901	5										
150	1405	196	0		1075	1192	674	2				1975	1119	1063	4	849	591	3	2950	1045	1379	6													
175	1370	193	0		1100	1180	667	2	1301	675	3	2000	1110	1054	4				3000	1029	1352	6													
200	1334	190	0	1301	533	1	1125	1167	668	2	1293	670	3	2025	1103	1044	4	1267	1381	5	3050	1016	1325	6	1117	1694	7								
225	1296	186	0	1409	531	1	1150	1154	652	2	1285	665	3	2050	1095	1034	4	1208	1374	5	3100	991	1291	6	1103	1674	7								
250	1256	181	0	1476	538	1	1175	1140	644	2	1277	661	3	2075	1081	1023	4	1194	1367	5	3150	969	1256	6	1092	1652	7								
275	1214	176	0	1464	528	1	1200	1126	636	2	1268	655	3	2100	1071	1012	4	1168	1360	5	3200	946	1216	6	1079	1631	7								
300	1168	169	0	1451	526	1	1225	1111	627	2	1260	650	3	2125	1061	1000	4	1161	1352	5	3250	919	1169	6	1066	1608	7								
325	1116	161	0	1458	524	1	1250	1096	617	2	1252	645	3	2150	1050	988	4	1174	1345	5	3300	886	1112	6	1052	1583	7								
350	1056	151	0	1425	522	1	1275	1080	607	2	1243	639	3	2175	1039	975	4	1168	1337	5	3350	856	1059	6	1037	1557	7								
375	990	137	0	1412	528	1	1300	1063	596	2	1235	634	3	2200	1027	962	4	1161	1329	5	3400				1021	1529	7								
400	924	107	0	1396	517	1	1325	1046	584	2	1224	628	3	2225	1015	948	4	1154	1321	5	3450	1160	1064	6	1005	1498	7								
425				1385	514	1	1350	1027	571	2	1217	621	3	2250	1002	933	4	1147	1313	5	3500	1039	1041	6	987	1466	7								
450				1371	511	1	1375	1006	558	2	1208	615	3	2275	988	917	4	1140	1304	5	3550	1017	1020	6	968	1436	7								
475				1357	508	1	1400	984	541	2	1199	608	3	2300	974	899	4	1132	1295	5	3600	1005	1007	6	948	1399	7								
500	1426	771	2	1343	504	1	1425	959	523	2	1190	602	3	2325	958	880	4	1125	1286	5	3650	1002	1002	6	924	1364	7								
525	1414	769	2	1329	501	1	1450	930	501	2	1180	596	3	2350	941	867	4	1117	1277	5	3700	1000	1000	6	906	1329	7								
550	1410	767	2	1313	497	1	1475	894	474	2	1170	587	3	2375	922	836	4	1110	1267	5	3750	1025	1025	6	882	1292	7								
575	1401	764	2	1300	493	1	1500	830	433	2	1160	579	3	2400	901	819	4	1102	1257	5	3800	1010	1007	6	863	1105	7								
600	1382	761	2	1285	488	1	1525				1150	571	3	2425	875	797	4	1094	1247	5	3850	995	1005	6											
625	1362	756	2	1269	483	1	1550				1140	563	3	2450	840	793	4	1085	1236	5	3900	978	1020	6											
650	1343	750	2	1253	478	1	1575				1129	554	3	2475				1077	1225	5	3950	960	1002	6	1060	1078	7								
675	1363	752	2	1237	473	1	1600	1237	1174	4	1118	545	3	2500				1068	1214	5	4000	941	1040	6	1049	1045	7								
700	1354	748	2	1220	467	1	1625	1230	1168	4	1107	536	3	2525	1163	1151	4	1059	1202	5	4050	919	1042	6	1036	1018	7								
725	1344	745	2	1203	461	1	1650	1223	1162	4	1095	526	3	2550	1157	1143	4	1050	1190	5	4100	893	1036	6	1023	1009	7								
750	1334	741	2	1185	454	1	1675	1216	1156	4	1083	516	3	2575	1151	1135	4	1041	1177	5	4150	862	1066	6	1010	1009	7								
775	1324	737	2	1167	447	1	1700	1208	1149	4	1070	505	3	2600	1144	1126	4	1031	1163	5	4200	814	1259	6	996	1026	7								
800	1314	731	2	1148	439	1	1725	1201	1143	4	1057	493	3	2625	1138	1118	4	1021	1149	5	4250				981	1001	7								
825	1304	729	2	1128	431	1	1750	1194	1136	4	1044	481	3	2650	1132	1109	4	1010	1135	5	4300				964	1004	7								
850	1294	725	2	1106	422	1	1775	1186	1129	4	1029	468	3	2675	1125	1100	4	999	1119	5	4350				947	1012	7								
875	1283	720	2	1084	412	1	1800	1178	1121	4	1014	454	3	2700	1119	1090	4	988	1103	5	4400				928	1006	7								
900	1273	715	2	1059	401	1	1825	1170	1114	4	999	439	3	2725	1112	1080	4	976	1085	5	4450				908	1014	7								
925	1262	710	2	1033	389	1	1850	1162	1106	4	981	422	3	2750	1105	1070	4	963	1067	5	4500				880	1001	7								
950	1251	705	2	1003	375	1	1875	1154	1098	4	962	404	3	2775	1098	1060	4	949	1047	5	4550				847	1001	7								
975	1240	699	2	969	358	1	1900	1146	1090	4	941	383	3	2800	1091	1048	4	934	1025	5															
1000	1229	693	2	928	338	1																													

Figure 1. Abridged Firing Table for 81-mm HE and WP

- b. The abridged firing table for the 81-mm illumination (FT 81-AL-1) contains columns for range, charge, elevation, and fuze setting (Figure 2). The information in this firing table also overlaps, giving a choice of two charges for most ranges. The one fault with this firing table is that there are no time or elevation corrections given to correct for height-of-burst corrections (up or down) given by the forward observer.

Performance Steps

CARTRIDGE, ILLUMINATING, M301A3 FUZE, TIME, MB4A1				FT 81-AL-1 (ABRIDGED)			FT 81-AL-1 (ABRIDGED)			CARTRIDGE, ILLUMINATING, M301A3 FUZE, TIME, MB4A1			
RANGE M	ELEV MILS	FS	CHG	ELEV MILS	FS	CHG	RANGE M	ELEV MILS	FS	CHG	ELEV MILS	FS	CHG
250	1801	20.6	3				1700	1181	26.7	6	1248	33.4	6
300	1481	20.6	3				1750	1130	26.3	6	1236	33.1	6
350	1460	20.6	3	1801	26.1	4	1800	1108	26.9	6	1222	32.8	6
400	1438	20.4	3	1488	26.0	4	1850	1086	26.4	6	1208	32.5	6
450	1418	20.2	3	1471	25.9	4	1900	1069	24.8	6	1194	32.1	6
500	1396	20.1	3	1467	25.8	4	1950	1029	24.2	6	1179	31.8	6
550	1374	20.0	3	1442	25.8	4	2000	993	23.3	6			
600	1361	19.8	3	1427	25.7	4	2050						
650	1327	19.6	3	1411	25.6	4	2100	1221	37.8	7	1131	30.6	6
700	1302	19.4	3	1396	25.4	4	2150	1209	37.6	7	1113	30.1	6
750	1276	19.1	3	1380	25.3	4	2200	1197	37.2	7	1094	29.6	6
800				1363	25.2	4	2250	1186	36.9	7	1074	29.1	6
850	1404	30.7	6	1347	25.0	4	2300	1172	36.6	7	1062	28.6	6
900	1382	30.6	6	1330	24.8	4	2350	1158	36.1	7	1028	27.9	6
950	1379	30.4	6	1312	24.6	4	2400	1145	36.7	7	1000	27.1	6
1000	1366	30.2	6	1294	24.4	4	2450	1130	36.2	7	967	26.1	6
1050	1363	30.1	6	1276	24.2	4	2500	1116	34.7	7	922	24.9	6
1100	1340	29.9	6	1267	24.0	4	2550	1100	34.2	7			
1150	1326	29.7	6	1237	23.7	4	2600	1083	33.7	7	1168	41.0	8
1200	1313	29.6	6	1216	23.4	4	2650	1066	33.1	7	1156	40.5	8
1250	1299	29.3	6	1194	23.1	4	2700	1047	32.6	7	1144	40.1	8
1300	1284	29.1	6	1170	22.8	4	2750	1026	31.8	7	1131	39.6	8
1350	1269	28.9	6	1146	22.4	4	2800	1003	31.0	7	1118	39.1	8
1400	1254	28.6	6	1118	21.9	4	2850	978	30.1	7	1104	38.6	8
1450	1239	28.4	6	1087	21.4	4	2900	947	29.0	7	1090	38.1	8
1500	1222	28.1	6	1061	20.7		2950	906	27.6	7	1076	37.5	8
1550							3000				1069	36.8	8
1600	1206	27.8	6				3050				1042	36.2	8
1650	1188	27.5	6	1274	33.9	6	3100				1024	35.6	8
1700	1170	27.1	6	1261	33.6	6	3150				1004	34.7	8
							3200				982	33.8	8
							3250				967	32.7	8
							3300				927	31.5	8
							3350				884	29.8	5

Figure 2. Abridged Firing Table for 81-mm Illumination

2. To use the abridged firing table, the computer/squad leader—
 - a. Reads down the range column to the desired range.
 - b. Reads across the card to locate the two charges given for that range.
 - c. Picks the lower of the two charges.
 - d. Selects the elevation that goes with the charge selected (the elevation is always to the left).

NOTE: The charge selected is always the lowest charge possible to reach the target. The one exception to this rule is firing without an fire direction center (FDC) and using the ladder method of adjustment or when determining the mil length of a deep target to use searching fire.

EXAMPLE (Figure 1):

Range 1,925 meters Charge 3, elevation 943;

Range 2,525 meters Charge 4, elevation 802.

3. The unabridged firing tables are normally used only in the FDC by the computer and contain the following tables:
 - a. Table A—wind components (used only with the meteorological [MET] message).
 - b. Table B—temperature and density corrections (used only with the MET message).
 - c. Table C—propellant temperature (used only with the MET message).
 - d. Table D—basic data and correction factors.
 - e. Table E—supplementary data.

NOTE: Tables A, B, and C are used only in computing a MET message (for more information on these tables, see task 071-076-0004: Compute Meteorological Firing Corrections, which can be found in STP 7-11BC24-SM-TG).

Performance Steps

4. Tables D and E of the firing tables are the tables most often used by the computer. The most often used columns are shown in Table 1.

Table 1. Commonly Used Columns

FIRING TABLES	TABLE	COLUMN
FT 4.2-K-2	D	1 RANGE
	D	2 CHARGE
	D	7 TIME OF FLIGHT
	E	10 MAXIMUM ORDNANCE
FT 4.2-H-2	D	1 RANGE
	D	2 CHARGE
	D	7 TIME OF FLIGHT
	E	10 MAXIMUM ORDNANCE
FT81-AI-3	D	1 RANGE
	D	2 ELEVATION
	D	6 TIME OF FLIGHT
	E	8 MAXIMUM ORDNANCE
FT 60-P-1	D	1 RANGE
	D	2 ELEVATION
	D	4 TIME OF FLIGHT
	E	5 MAXIMUM ORDNANCE

NOTE: At the present time, a complete firing table for the 120-mm mortar has not been printed.

5. Under the new doctrine of firing the mortars at the lowest elevation (4.2-inch mortar) or lowest charge (81-mm/60-mm/120-mm mortar), there is a way to modify the firing tables to aid the computer in determining which elevation or charge to use.
- a. FT 4.2-K-2. On the index of each elevation, print in the minimum and maximum ranges each elevation will fire as shown in Figure 3. As shown, the 4.2-inch mortar will fire from 910 meters to 6,840 meters at 0800-mil elevation. This means that the 4.2-inch mortar should always fire at 0800-mil elevation, unless the rounds will not clear a terrain feature between the mortars and the target or unless the target is closer than 910 meters.

Table of Contents	Intro	Part 1	910 - 6840 800 mils	880 - 6650 900 mils	770 - 6660 1065 mils	Appendixes
(PAGE INDEX OF FT 4.2-K-2)						

Figure 3. Page Index of FT 4.2-K-2

- b. FT 4.2-H-2. Print in the minimum and maximum ranges each elevation will fire with and without extension on page II, as shown in Figure 4. Again, use 0800-mil elevation with or without extension, unless terrain or target position precludes its use. To be more exact in keeping the maximum ordnance as low as possible, use 0800-mil elevation without extension when firing at ranges between 1,080 meters and 3,800 meters; from 3,830 meters to 5,650 meters, use 0800-mil elevation with extension. A 0900-mil elevation should never be

Performance Steps

used. The maximum ordinance for 0900-mil elevation is never lower than 0800-mil elevation with or without extension. A 1065-mil elevation should only be used when ranges are between 920 meters and 1,080 meters.

Table of Contents	Intro	Part 1	1080 3800 800 of w o	900 of w o	920 1080 1065 of w o	3830 800 of w	900 of w	1065 of w	Part 2 XM630	Part 3 M335A1	Part 4 M335A2	App.
(PAGE INDEX of FT 4.2-H-2)												

Figure 4. Page Index of FT 4.2-H-2

- c. FT 81-A1-3. Print in the minimum and maximum ranges each charge will fire on page II as shown in Figure 5. By looking at the ranges shown, the computer can tell the lowest charge that can be used.

FT 81-A1-3		
INTRODUCTION (CONTINUED)		
		PAGE
PROBABILITY TABLE		XXXIV
NATURAL TRIGONOMETRIC FUNCTIONS		XXXVII
METERS/YARDS/FEET CONVERSION TABLE		XXXVIII
CHARGE VERSUS RANGE TABLES		XXXIX
PART I		1
CARTRIDGE, HE, M374A2 AND WP, M375A2		
PART 1-0	CHARGE 0 10-401	3
PART 1-1	CHARGE 1 181-1037	11
PART 1-2	CHARGE 2 263-1508	23
PART 1-3	CHARGE 3 348-1991	35
PART 1-4	CHARGE 4 432-2466	49
PART 1-5	CHARGE 5 513-2729	63
PART 1-6	CHARGE 6 592-3374	81
PART 1-7	CHARGE 7 668-3802	99
PART 1-8	CHARGE 8 741-4209	117
PART 1-9	CHARGE 9 811-4595	137
PART 2		157
CARTRIDGE, ILLUMINATING, M301A3		
PART 2-3	CHARGE 3 100-850	159
PART 2-4	CHARGE 4 100-1400	161
PART 2-5	CHARGE 5 100-1850	163
PART 2-6	CHARGE 6 100-2250	167
PART 2-7	CHARGE 7 100-2600	171
PART 2-8	CHARGE 8 100-2950	176
PART 2-9	FUZE SETTING CORRECTIONS	179
II		

Figure 5. Firing Table 81-A1-3

- d. FT 60-P-1. Print in the minimum and maximum ranges each charge will fire on the table of contents as shown in Figure 6. By looking at the ranges shown, the computer can tell the lowest charge that can be used.

Performance Steps

TABLE OF CONTENTS	
LIST OF ABBREVIATIONS	
<u>CARTRIDGE, HE, HX720 WITH FUZE, MO, XM734</u>	
CHARGE 0 - CARTRIDGE ONLY	70-407
CHARGE 1 - CARTRIDGE PLUS 1 INCREMENT	221-1342
CHARGE 2 - CARTRIDGE PLUS 1 INCREMENTS	346-2153
CHARGE 3 - CARTRIDGE PLUS 2 INCREMENTS	480-2890
CHARGE 4 - CARTRIDGE PLUS 4 INCREMENTS	628-3498
<u>CARTRIDGE, HE, XM720 WITH FUZE, PD, XM935E1</u>	
CHARGE 0 - CARTRIDGE ONLY	67-387
CHARGE 1 - CARTRIDGE PLUS 1 INCREMENT	212-1292
CHARGE 2 - CARTRIDGE PLUS 2 INCREMENTS	349-2091
CHARGE 3 - CARTRIDGE PLUS 3 INCREMENTS	494-2842
CHARGE 4 - CARTRIDGE PLUS 4 INCREMENTS	641-3519
<u>CARTRIDGE, HE, M49A4</u>	
CHARGE 0 - CARTRIDGE ONLY	44-261
CHARGE 1 - CARTRIDGE PLUS 1 INCREMENT	118-689
CHARGE 2 - CARTRIDGE PLUS 2 INCREMENT	200-1137
CHARGE 3 - CARTRIDGE PLUS 3 INCREMENTS	268-1563
CHARGE 4 - CARTRIDGE PLUS 4 INCREMENTS	327-1930
<u>CARTRIDGE, WP, M302A1</u>	
CHARGE 0 - CARTRIDGE ONLY	33-201
CHARGE 1 - CARTRIDGE PLUS 1 INCREMENT	83-507
CHARGE 2 - CARTRIDGE PLUS 2 INCREMENTS	149-894
CHARGE 3 - CARTRIDGE PLUS 3 INCREMENTS	217-1278
CHARGE 4 - CARTRIDGE PLUS 4 INCREMENTS	275-1629
<u>CARTRIDGE, ILLUMINATING, M83A3</u>	
CHARGE 2 - CARTRIDGE PLUS 2 INCREMENTS	726-931

Figure 6. Firing Table 60-P-1

Evaluation Preparation: Setup: At the test site, provide all materials and information given in the task conditions statement. The Soldier is required to find and give the data from the correct firing table as required by the grader.

Brief Soldier: Tell the Soldier that he is required to give information extracted from the firing table, based on information and requirements given by the grader.

Performance Measures

1. Abridged firing table: find and give correct data, when requested.
2. Unabridged firing tables:
 - a. When required, give brief explanation of Tables A, B, and C of firing table.
 - b. Find and give correct data in Tables D and E, when requested.

GO NO GO

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

**References
Required**

Related
STP 7-11BC24-SM-TG

Subject Area 4: PLOTTING BOARD

Prepare a Plotting Board for Operation Using the Pivot-Point Method**071-078-0001**

Conditions: Given an M16 plotting board; DA Form 2399, Computer's Record; range and direction to the reference point (RP); a firing table (FT 81-AI-3) or the card firing table packed with the ammunition; a referred deflection of 2800 mils; a No. 2 pencil; and a map of the area with the mortar position plotted.

- Standards:**
1. Determined the mounting azimuth without error.
 2. Plotted the RP using range and directions without error.
 3. Placed the deflection scale on the azimuth disk to cover 400 mils left and right of the referred deflection without error.
 4. Plotted the RP and determined the RP deflection to within 1 mil with a 10-mil tolerance.

Performance Steps

Prepare the M16 plotting board for operation (Figure 1).

1. The given direction of fire must be rounded off to the nearest 50 mils to determine the mounting azimuth.

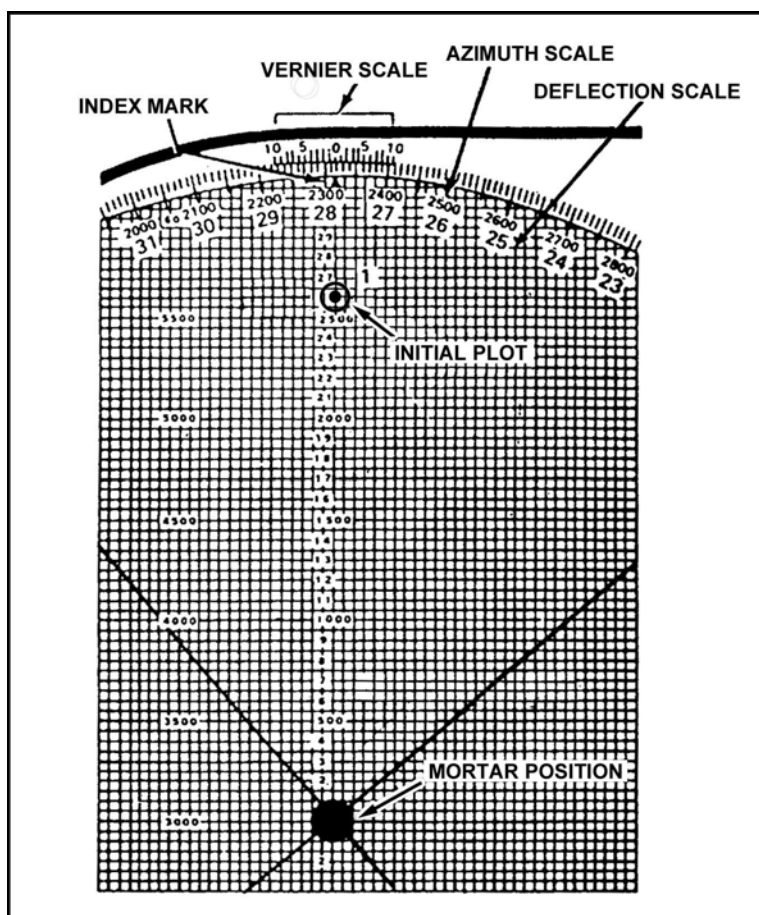


Figure 1. Preparing the M16 Plotting Board for Operation

NOTE: The direction of fire used in this task is 2316 mils. This was determined by plotting the mortar position and the target on the map, then using a protractor.

Evaluation Preparation: SETUP: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to use the equipment and information provided and to set up the plotting board as an observed chart using the pivot-point method.

Performance Measures	<u>GO</u>	<u>NO GO</u>
NOTE: Not to be sequence scored.		
1. Determined mounting azimuth without error.	_____	_____
2. Plotted RP without error.	_____	_____
3. Superimposed deflection scale without error.	_____	_____
4. Determined deflection to RP to within 1 mil with a 10-mil tolerance.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
DA FORM 2399
FT 81-AI-3

Related
FM 23-91

Prepare a Plotting Board for Operation Using the Below Pivot-Point Method

071-078-0002

Conditions: As a computer, given an M16 plotting board; 1:50,000 map; coordinate scale; mil protractor; ammunition count; firing tables; DA Form 2399, Computer's Record, call for fire; overlay of company's area of responsibility to include mortar position, targets, and reference points (RPs); referred deflection; and No. 2 pencil.

Standards:

1. Determined direction of fire to within 10 mils with a tolerance of 10 mils.
2. Determined mounting azimuth without error.
3. Superimposed referred deflection that corresponds to the mounting azimuth.
4. Plotted all known locations of mortars, targets, and RPs without error.
5. Completed computing the mission.

Performance Steps

NOTE: The information provided in this task applies to both the 60-mm and 81-mm mortars.

1. The computer prepares observed chart (below pivot point).
 - a. Determine data to set up the plotting board.
 - (1) Using the overlay, plot the mortar position and RP on the map.
 - (2) Using a mil protractor, determine the grid azimuth from the mortar position to the RP.
Record this azimuth (direction of fire) in the top margin of the computer's record.

NOTE: Information recorded in the margin of the computer's record is for training or may be used until the data sheet is set up.

- (3) To determine the mounting azimuth, round off the direction of fire to the nearest 50 mils.

EXAMPLE:

Direction of Fire 2315 — Mounting Azimuth 2300

Direction of Fire 2425 — Mounting Azimuth 2450

Direction of Fire 2435 — Mounting Azimuth 2450

- (4) Record the mounting azimuth in the top margin of the computer's record.
- (5) To set up the deflection scale on the plotting board, rotate the disk until the mounting azimuth is at the index mark. Directly below the mounting azimuth, write in the referred deflection (normally 2800) using the first two digits (28). Continue right or left of 28, using the LARS (left add, right subtract) rule, 400 to 500 mils (Figure 1).
- (6) To determine the chart deflection to fire the first round, index the grid azimuth (direction of fire) and read the deflection that corresponds to the grid azimuth. Record the deflection in the CHART DATA/DEFL block of the computer's record.

Performance Steps

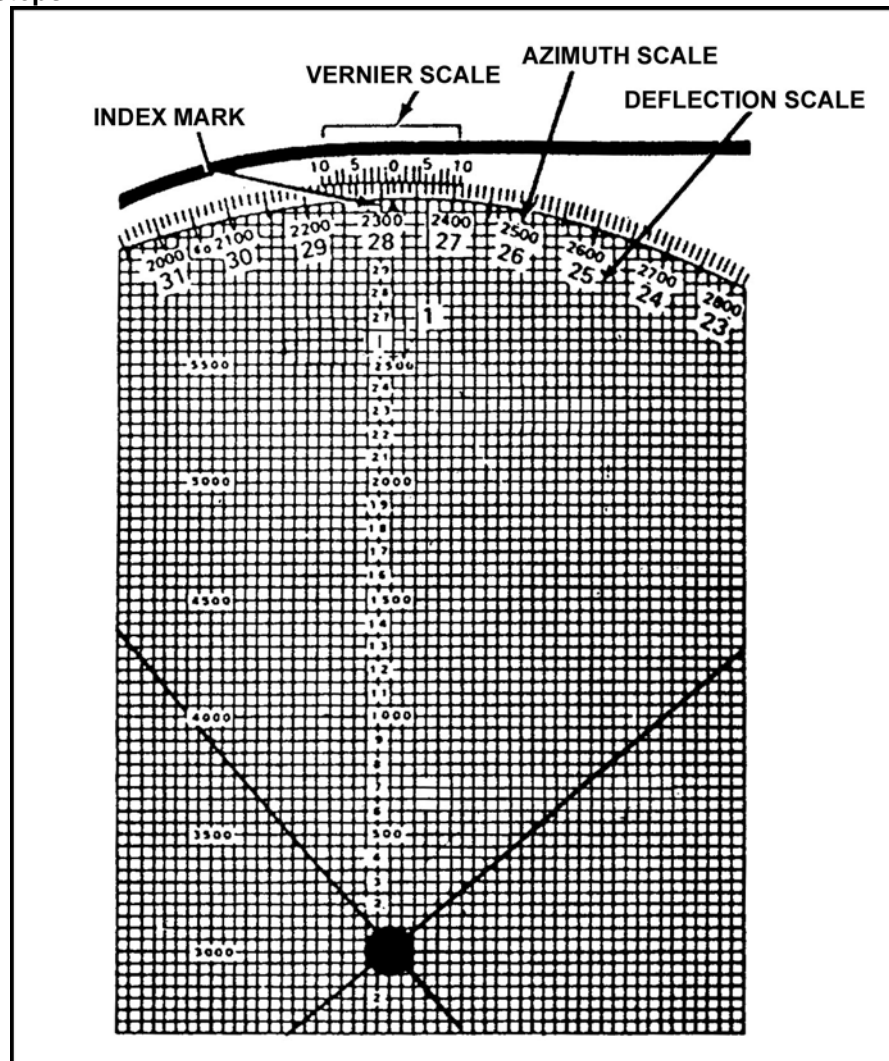


Figure 1. Placement of Deflection Scale on Disk

- b. Determine deflection. To determine the deflection for the first round, keep the direction of fire indexed and read the deflection as follows (Figure 2):

Performance Steps

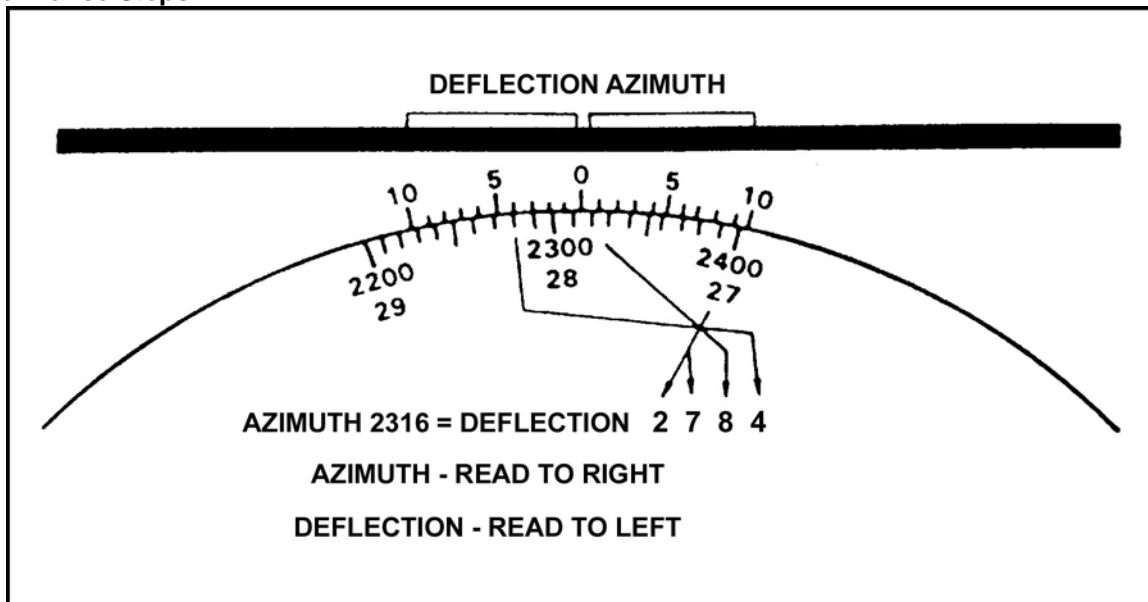


Figure 2. Deflection Determination

- (1) The first two digits are read from the deflection scale the computer placed on the plotting board. Since deflections increase to the left, look for the first number to the right of the index mark. In this example, it is 27.
- (2) The third digit is read from the 10-mil mark between deflection numbers 27 and 28. The index mark is between the eighth and ninth 10-mil mark, which makes the third digit 8.
- (3) The fourth digit is read at the Vernier scale. For deflections, use the left half of the scale. Count the 1-mil marks, starting at the 0, to the left until one of the 1-mil marks of the Vernier scale and one of the 10-mil marks on the azimuth disk are aligned. In this case, the fourth 1-mil mark is aligned, making the fourth digit 4.
- c. Determine range. The next step is to determine the range from the mortar position to the RP. Using the edge of the computer's record, place it along the line from the mortar to the reference point on the map. Then place a tick mark at the mortar and one at the reference point. Using the range scale of the map, determine the range in meters. Record this in the CHART DATA/CHG (RG) block of the computer's record.
- d. Plot the mortar and target. To complete setting up the plotting board, plot the mortar and reference point. Keeping the chart deflection indexed, move 500 meters to the right or left of the pivot point and down 2,000 meters (Figure 1). Make a small plot and enclose it with the mortar symbol (Figure 3). To plot the RP (range 2,150 meters), count the large and small squares, go straight up the board to the range, make a small plot, circle it, and number it (Figure 3).

Performance Steps

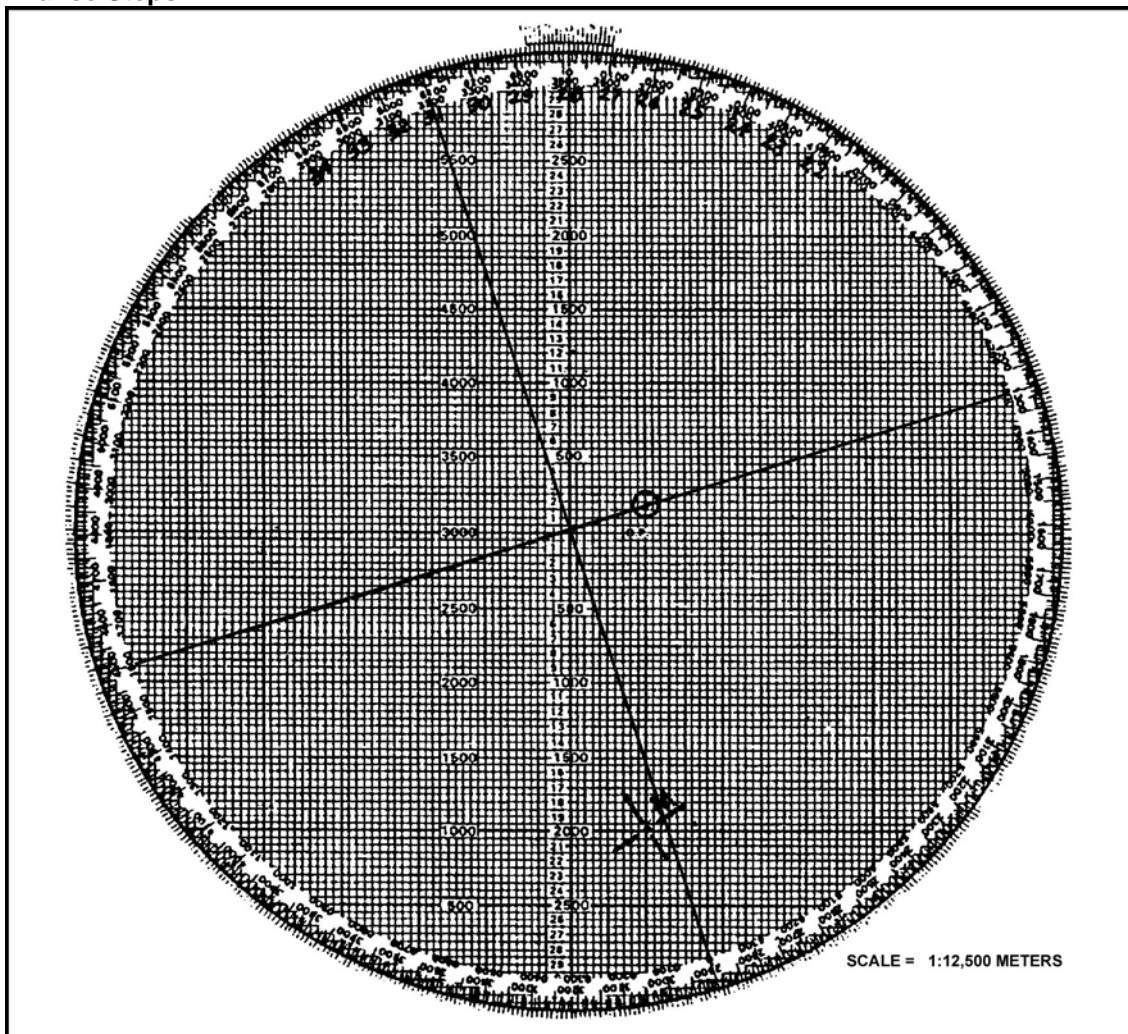


Figure 3. Mortar and Target Aligned

2. The computer plots forward observer's (FO's) correction. Receive and record the FO's correction (OBSERVER CORR) (Figure 1). Compute new data for the FO's correction as follows:
 - a. Index the FO's direction (taken from the call for fire) at the index mark on the plotting board. (Place a small triangle [DELTA] below the FO's direction.)
 - b. Plot the FO's correction from the last round fired (L3O, DROP 100). From round No. 1, go to the left 30 meters, or the equivalent of 3/5ths of one small square, and down 100 meters, or the equivalent of two small squares. Make a small plot, circle it, and label it "2."
3. The computer determines new firing data.
 - a. To determine the new deflection, range, charge, and elevation—
 - (1) Rotate the disk until the No. 2 plot is aligned with the mortar plot. (The mortar and No. 2 plot must be an equal distance from the same vertical line and on the same side of the same vertical line.)
 - (2) Keeping the plots aligned, read the deflection for plot No. 2 (Figure 1) and record on the computer's record.
 - (3) Using the tick marks on the edge of the computer's record, determine the range for the mortar and No. 2 plot using the alternate range scale. Using the firing table, select and record elevation (Figure 1).

Performance Steps

- (4) Place a "2" in the RDS EXP column.
- b. Repeat the above steps for all corrections sent by the FO until the mission is completed.
- c. The FO sends, "Add (drop) 25, fire for effect, end of mission." The computer plots this correction and determines the data, erasing all but the last plot from the board. The last plot marks the target (TGT) and is given a target number (Figure 4).

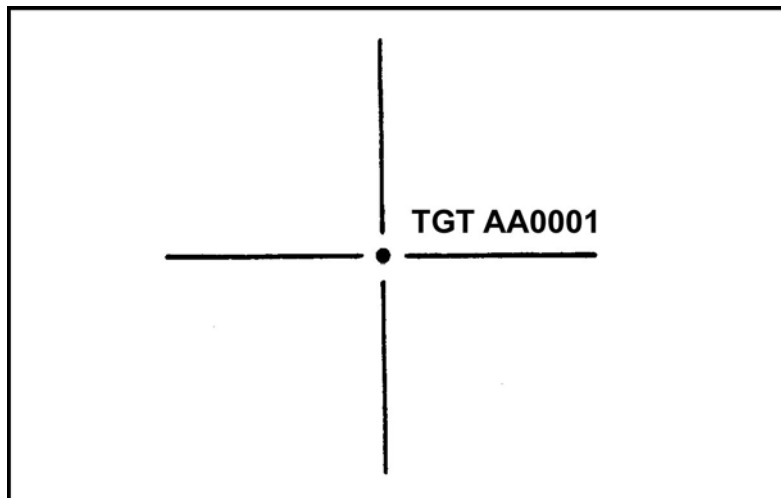


Figure 4. Last Plot, Registration Point 1

- d. Keep track of the number of rounds fired. Do this by recording the rounds fired in the RDS EXP column, and circle them as they are fired.
4. Upon receiving the end of mission for this or any mission, the computer must update the ammunition record at the bottom of the data sheet (DA Form 2188-R). To keep the ammunition count correct, the FDC obtains an ammunition count from all squad leaders. This is recorded on the computer's record. At the end of the mission, the computer subtracts the number of rounds fired from the total rounds on hand and rounds received. The remaining count is then carried forward to the computer's record for the next mission.

Evaluation Preparation: Setup: At the test site, provide all material and information given in the task condition statement.

Brief Soldier: Tell the Soldier to set up the plotting board using the information given and to compute the mission.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Properly positioned an overlay on the map.	—	—
2. Correctly plotted the mortar position and RP on the map, and determined the direction of fire to within 1 mil with a 5-mil tolerance.	—	—
3. Determined the mounting azimuth.	—	—
4. Superimposed the deflection scale.	—	—
5. Plotted the mortar position and target.	—	—
6. Computed the deflection for each FO correction to within 1 mil with a 10-mil tolerance.	—	—

Performance Measures	<u>GO</u>	<u>NO GO</u>
7. Computed the range for each FO correction to within 25 meters with a 25-meter tolerance.		
8. Determined the correct charge (lowest charge) and elevation for each range determined.	_____	_____
9. Completed the initial fire command and compute data for all corrections.	_____	_____
10. Correctly recorded rounds expended.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

DA FORM 2188-R
DA FORM 2399
FM 23-91

Compute Re-Registration Corrections Using a Plotting Board

071-078-0003

Conditions: Given a completed DA Form 2399, Computer's Record, for a registration mission and a directive to reregister; determine the new corrections to apply to new targets; and update the firing data sheet.

Standards: Determined firing data from reregistration and applied corrections to include—

1. Determined deflections to the nearest mil with a 10-mil tolerance.
2. Determined range to the nearest 25 meters with a 25-meter tolerance.
3. Determined deflection correction to within 1 mil with a 10-mil tolerance.
4. Determined range correction factor (RCF) to within 1 meter.
5. Correctly updated data sheet.

Performance Steps

NOTE: The information provided in this task applies to both the 60-mm and 81-mm mortars.

1. The corrections determined from the initial registration are usually valid for only a few hours. Changing weather, further settling of the baseplate, changes in ammunition temperature, and other factors tend to invalidate them. Therefore, every three to five hours, or after any noticeable weather change, firing corrections should be verified and updated. One way of doing this is by reregistration in which the same registration point is re-fired to determine how much firing corrections have changed.

2. The reregistration is performed in the same manner as the registration mission. During the reregistration, however, all firing corrections determined from the registration mission must be applied to the chart data to fire each round. In the example, information was determined for or from the registration mission.

EXAMPLE:

Chart range ----- 3,050

Chart deflection ----- 2790

Altitude correction (vertical interval) ----- -25

Deflection correction ----- L1

Range difference ----- +150

Range correction factor ----- +48

All of the firing corrections determined from the registration mission, except for the VI correction, were in the data fired and were determined only after the mission was completed.

3. During the registration mission, the chart data determined for the registration point (RP) were the initial chart range (3,050 meters) and the initial chart deflection (2790 mils). The data that were used to hit the RP were the final command range (3,200 meters) and the final command deflection (2801 mils). That means that the final data fired contained the firing corrections although the firing corrections were not known at that time.

4. To fire the reregistration, the computer must take the initial chart range and initial chart deflection and add the corrections back into them to determine the data to fire the first round (Figure 1).

EXAMPLE:

(Initial Chart Range + vertical interval (VI) Correction + Range Correction = Firing Data) OR

$(3,050 \text{ M} + (-25) + (48 \times 3.1) = +125 = 3,175 \text{ M})$ AND

(Initial Chart Deflection + Deflection Correction = Firing Data) OR

$(2790 \text{ mils} + L11 = 2801 \text{ mils})$.

The corrections of +125 meters for range and L11 for deflection must be added to the chart data determined for each adjusting round fired during the reregistration mission.

Figure 1. DA Form 2399

Performance Steps

5. The observer's corrections are plotted, and data are computed and sent to the section. When the observer splits a 50-meter range bracket, he announces, "End of mission, reregistration complete," with his correction. The computer computes the final firing data, but does not send them to the section; instead he sends, "End of mission," to the section.

NOTE: The computer may adjust the sheaf again if he has reason to suspect it, but this is usually not done.

6. Firing corrections must again be determined for both range and deflection.
 - a. To determine the new RCF to be applied to new targets and to update firing data for previously fired targets on the data sheet, the computer must use data from both the initial registration and reregistration as follows:
 RP Adjusted Range — 3,100 meters (range fired) + Altitude Corrections — +25 (reverse sign to strip out) = 3,125 meters (altitude stripped out).
 The range fired during reregistration to hit the RP is 3,125 meters, minus any altitude correction used.
 - b. To determine range difference:
 RP reregistration-adjusted range — 3,125 meters - (RP initial registration chart range — 3,050 meters) = (Range difference — +75 meters). Adjusted range is greater than chart range; the sign is a plus (+).
 - c. To determine the new RCF, divide the range difference (+75) by the chart range to the RP expressed in thousands. In this case, 3,050 become 3.1. $75 \div 3.1 = 24.2 = +24$ (new RCF)
 - d. To determine the new deflection correction, determine the difference between the reregistration-adjusted deflection and the initial registration chart deflection. If the reregistration-adjusted deflection is larger than the initial registration chart deflection, the deflection correction is a plus (+); if it is smaller, the deflection correction is a minus (-).
 EXAMPLE: On initial registration, the RP chart deflection was 2790 mils. Several hours later, reregistration was conducted, and the RP was hit with an adjusted deflection of 2788 mils. The deflection correction is determined as follows: $2790 - 2788 = R2$. Since the reregistration-adjusted deflection is smaller than the initial registration chart deflection, the deflection correction is a minus (R2). This R2 is applied to all deflections regardless of range to other targets.
 - e. To determine the data to hit new targets and to update firing data for previously fired targets, apply the RCF and deflection correction to data used to hit the target. (Figure 2).
 EXAMPLE: Target AC0050 was fired earlier with a chart range of 2,975 meters, a chart deflection of 2715 mils, and an altitude correction of -25.

The new data would be determined as follows:

RANGE: Chart range (2,975 meters) rounded to nearest hundred (3,000) expressed in thousands of meters (3.0) multiplied by the new RCF (+24) ($3.0 \times 24 = +72$); $2,975 + (+72) + (-25) = 3,025$ meters (round to nearest 25 meters for 81-mm mortar). DEFLECTION: Chart deflection 2715 mils, plus the new deflection correction R2: $2715 + R2 = 2713$ mils.

Performance Steps

DATA SHEET																	
For use of this form, see FM 23-91, the proponent agency is TRADOC																	
SETUP				WEAPON DATA				FO DATA									
TIME OUT	60			UNIT	B 1/29			WPM	1			FO	ALT	GRND			
TGT PRFX	AB			WPM	5250			WPM				FO	ALT	GRND			
TGT NO	0100-0500			WPM	50			WPM				FO	ALT	GRND			
ALARM	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF			WPM	50			WPM				FO	ALT	GRND			
MIN E	096			WPM	3			WPM				FO	ALT	GRND			
MIN N	029			WPM	2050			WPM				FO	ALT	GRND			
GD <input checked="" type="checkbox"/> E <input type="checkbox"/> W	10			WPM	50			WPM				FO	ALT	GRND			
LAT <input checked="" type="checkbox"/> N <input type="checkbox"/> S	34			WPM	4			WPM				FO	ALT	GRND			
LISTEN	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF			WPM	2050			WPM				FO	ALT	GRND			
BIT RATE	1200			WPM	100			WPM				FO	ALT	GRND			
KEY TONE	1.4			WPM				WPM				FO	ALT	GRND			
BLK	<input checked="" type="checkbox"/> SHG <input type="checkbox"/> DGL			WPM				WPM				FO	ALT	GRND			
OWNER ID	A			WPM				WPM				FO	ALT	GRND			
AMMUNITION DATA																	
TEMPERATURE				70°													
				TYPE <input checked="" type="checkbox"/> HE <input checked="" type="checkbox"/> WP <input checked="" type="checkbox"/> IL <input type="checkbox"/> CS <input type="checkbox"/> TNG													
LOT NUMBER	HE 600B			LOT NUMBER	WP 800B			LOT NUMBER	ILL A06								
WEIGHT	200			WEIGHT	100			WEIGHT	50								
ON HAND	100			ON HAND	50			ON HAND	25								
RECEIVED	300			RECEIVED	150			RECEIVED	75								
TOTAL	24			TOTAL	276			TOTAL									
ROUNDS EXPENDED				ROUNDS EXPENDED				ROUNDS EXPENDED									
ROUNDS REMAINING				ROUNDS REMAINING				ROUNDS REMAINING									
TARGET DATA																	
TARGET ID		CHART DATA		FIRING CORRECTIONS				FIRING DATA				INTELLIGENCE		ROUNDS			
TGT NO.	GRND	ALT	DEFL	NO CHG	DEFL CORR	RANGE CORR	ALT CORR	DEFL	NO CHG	FUZE TIME SETTING	ELEV	TIME FIRED	TGT DES	MET OF ENG	SUR	EXP	REM
RD1	9959	5684	2740	30 50	L11	+150	470 -50	2809	3175		0958		RP #1	R/C	HE	293	
AC	0050		2715	2475	L11	+144	470 -50	2726	3100		0991		P10	SBC	HE	219	
UPDATING AFTER REGISTRATION																	
RD1		2740	30 50	R2	+75	470 -50	2708	3100		0941							
AC	0050		2715	2475	R2	+72	470 -50	2713	3025		1019						
DA FORM 2188-R, DEC 91																	
REPLACES DA FORM 2188-R, MAR 77 WHICH IS OBSOLETE																	

Figure 2. DA Form 2188-R

Evaluation Preparation: Setup: At the test site, provide an M16 plotting board, computer's record, No. 2 pencil, firing table, and the completed computer's record and data sheet for the registration mission. Give the Soldier a call for fire, completed fire direction center (FDC) order, and three forward observer (FO) corrections for the reregistration mission.

Brief Soldier: Tell the Soldier to use the data given for the reregistration, and the computer's record and data sheet for the registration mission, to compute the data for reregistration, to determine the new deflection correction and RCF, to record reregistration data on the data sheet, and to update the data for any previously fired targets.

Performance Measures	<u>GO</u>	<u>NO GO</u>
NOTE: Not to be sequence scored.		
1. Correctly recorded the call for fire on the computer's record.	_____	_____
2. Completed the heading of the computer's record without error.	_____	_____
3. Completed the initial fire command using the final adjusted deflection, charge, and elevation for the registration mission.	_____	_____
4. Correctly recorded the FO's subsequent corrections.	_____	_____
5. Computed data for all subsequent fire commands using the firing corrections determined from the registration mission.	_____	_____
6. Computed the new deflection correction without error.	_____	_____
7. Computed the new RCF without error.	_____	_____
8. Recorded the re-registration on the data sheet without error.	_____	_____
9. Updated the data on the data sheet for all previously fired targets without error.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
DA FORM 2399

Related
FM 23-91

Compute Data for a Polar Mission Using a Plotting Board

071-078-0004

Conditions: As a computer, given a plotting board prepared for operation as a modified observed chart to include coordinate system, deflection scale, mortar, reference point (RP) and the forward observer (FO) positions plotted; firing tables; DA Form 2399, Computer's Record, with heading and fire direction center (FDC) order completed; No. 2 pencil; forward observer's call for fire using the polar method of target location; and one subsequent correction.

Standards: 1. Determined deflections to the nearest mil with a 10-mil tolerance.
2. Determined range to the nearest 25 meters with a 25-meter tolerance.
3. Converted range to the correct charge and elevation.

Performance Steps

NOTE: The information provided in this task applies to both the 60-mm and 81-mm mortars (M16 and M19 plotting boards).

1. The computer records the call-for-fire on the computer's record just as it is received. This must include the FO's call sign (Figure 1). Check the call-for-fire to determine if it contains enough information to fire the mission to include—
 - a. Direction and distance (from FO to target).
 - b. Target description.

COMPUTER'S RECORD				
For use of this form, see FM 23-91; the proponent agency is TRADOC				
ORGANIZATION <i>B CO 1/66</i>	DATE <i>25 JUL</i>	TIME <i>0930</i>	OBSERVER ID <i>F1A25</i>	TARGET NUMBER
<input checked="" type="checkbox"/> ADJUST FIRE <input type="checkbox"/> FIRE FOR EFFECT <input type="checkbox"/> IMMEDIATE SUPPRESSION	SHIFT FROM _____ OT DIRECTION _____ ALTITUDE _____ () LEFT / () RIGHT _____ <input type="checkbox"/> ADD / <input type="checkbox"/> DROP _____ () UP / <input type="checkbox"/> DOWN _____		POLAR OT DIRECTION <i>1290</i> ALTITUDE _____ DISTANCE <i>900</i> <input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____ VERTICAL ANGLE <input type="checkbox"/> + / <input type="checkbox"/> - _____	
GRID _____ OT DIRECTION _____ ALTITUDE _____			TARGET DESCRIPTION <i>TROOPS IN OPEN</i> METHOD OF CONTROL _____	
METHOD OF ENGAGEMENT _____ FDC ORDER _____			MESSAGE TO OBSERVER _____ INITIAL FIRE COMMAND _____	
INITIAL CHART DATA _____			ROUNDS EXPENDED _____	

Figure 1. Example of Completed Call-for-Fire

NOTE: Before computing a polar mission, the FDC must know or request the FO's position and plot it on the plotting board. The FO must send the grid coordinates of his position in code.

2. The computer plots the target location as follows:
 - a. Index the FO's direction given in the call-for-fire (Figure 2).
 - b. Plot the distance given in the call-for-fire using the edge of the computer's record. Place the corner of the computer's record on the line of the alternate range scale of the zero line of the alternate range scale of the plotting board; make a tick mark at the distance (range) given in the call-for-fire—for example, 900 meters (Figure 2). Move the computer's record to the FO's plotted position with the corner placed on the FO's plot. After making sure the edge of the computer's record is parallel to the line on the gridded base, make a plot on the disk at the tick mark on the computer's record. Circle the plot, and label it "1."

Performance Steps

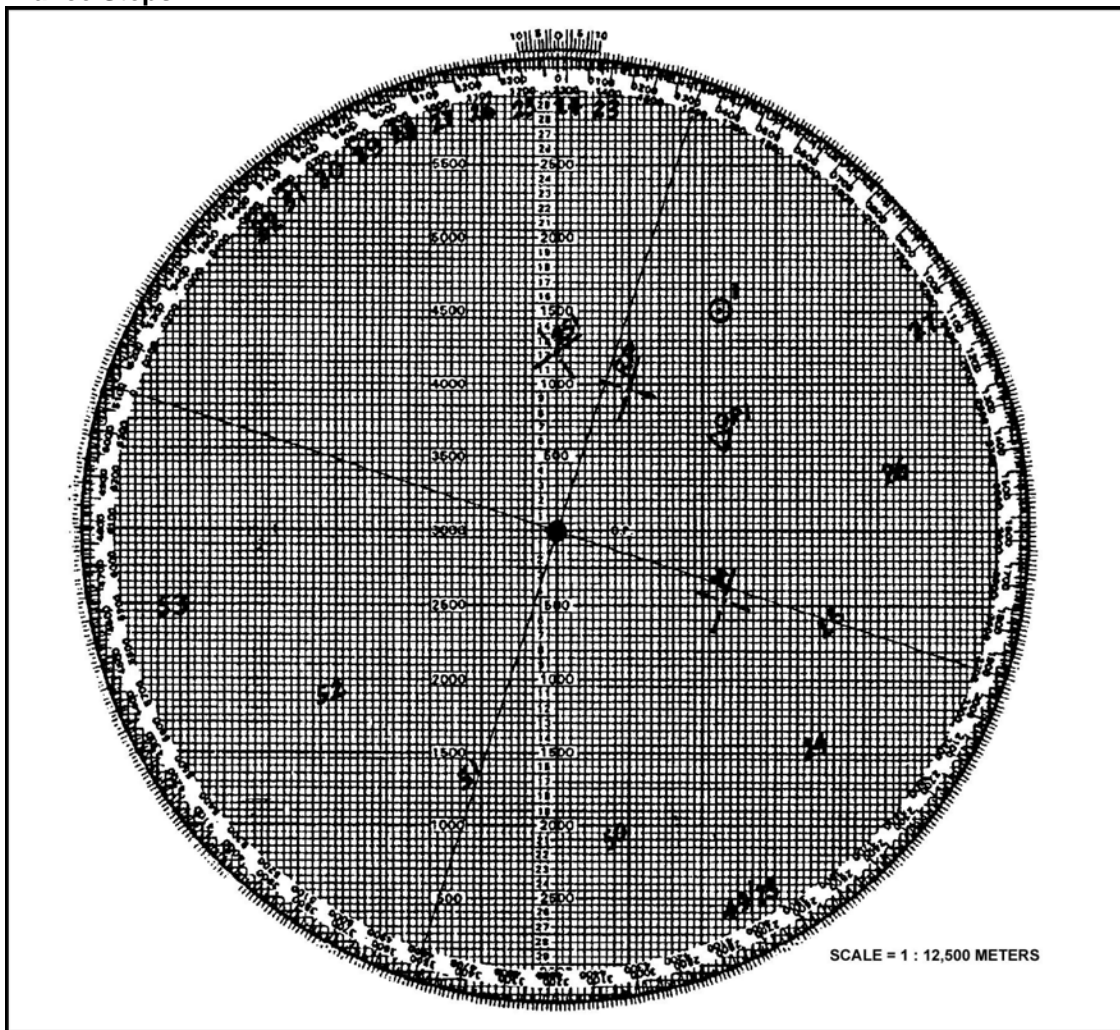


Figure 2. Plotting Target Location

3. The computer determines the deflection and range.
 - a. Rotate the disk until the target plot is aligned with the mortar plot, which must always be toward the bottom of the plotting board (Figure 2).
 - b. Read the deflection at the index mark and record it on the computer's record.
 - c. Place the edge of the computer's record on the mortar plot, making a tick mark at the target plot. Then, using the alternate range scale, determine the range from the mortar to the target and record it on the computer's record.
 - d. Using the firing table, determine and record the correct charge and elevation for the range determined.
4. The computer has enough data to complete the initial fire command. After giving the command to the mortars, he places a "1" in the rounds expended (RDS EXP) column of the computer's record, and circles it after the round is fired.
5. Upon receiving the FO's correction (Figure 3), the computer indexes the FO's direction and makes the correction from the No. 1 plot (Figure 4). He makes corrections, as they are received, from the preceding plot.

Figure 3. Example of FO's Correction on Computer Record

3-138

Performance Steps

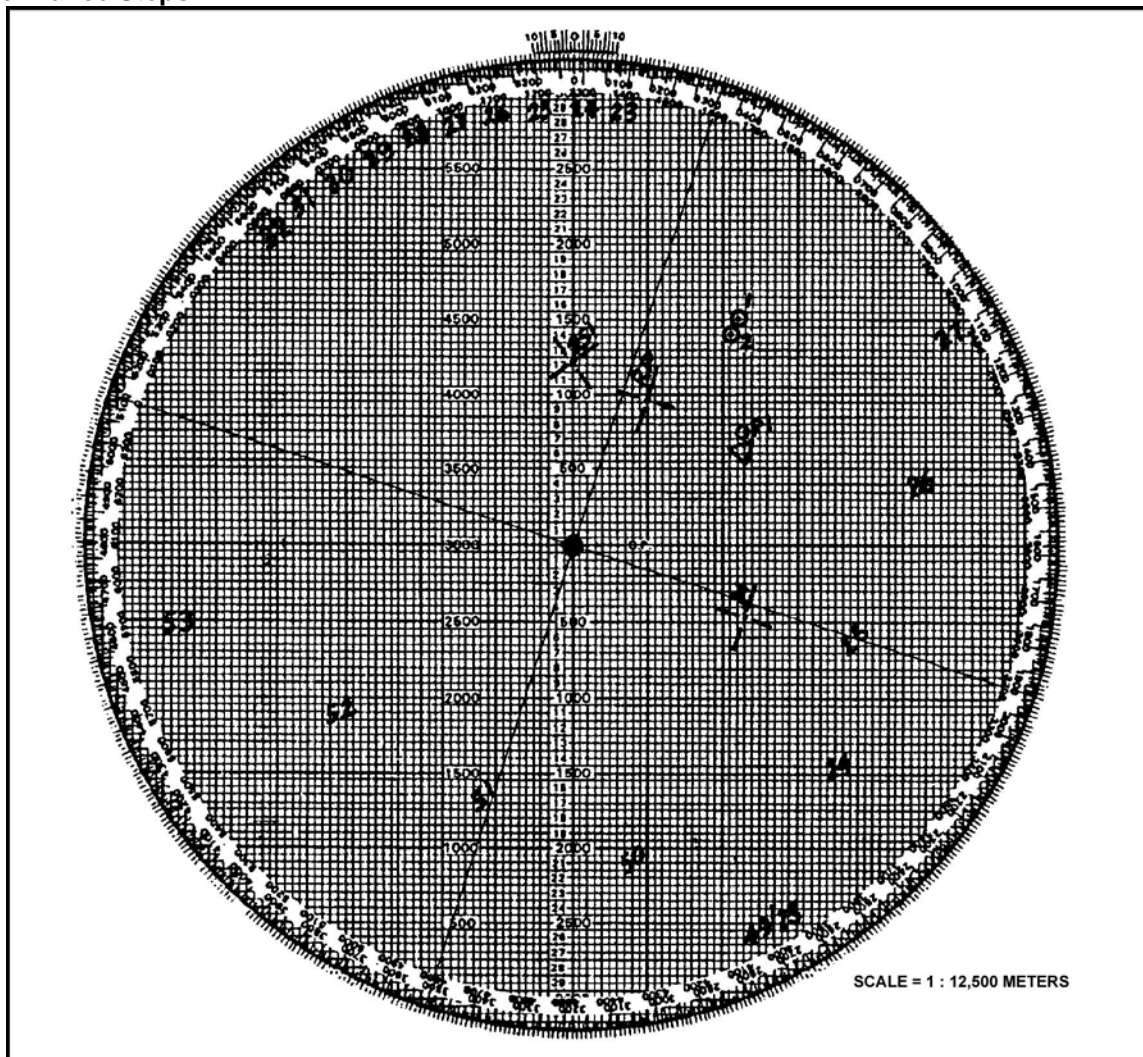


Figure 4. Plotting Corrections

Evaluation Preparation: SETUP: At the test site, provide all materials, equipment, and information given in the task condition statement.

Brief Soldier: Tell the Soldier to: use the items provided, record the call-for-fire, compute, and record the data (for the heading, initial fire command, subsequent command, and rounds expended).

Performance Measures

NOTE: Not to be sequence scored.

1. Recorded the call for fire without error.
2. Indexed the direction given in the call for fire without error.
3. Plotted the target at the correct range using the correct FO position.
4. Properly aligned the target plot with the mortar plot.
5. Determined the deflection to within 1 mil with a 10-mil tolerance.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Performance Measures	<u>GO</u>	<u>NO GO</u>
6. Determined the range to within 25 meters with a 25-meter tolerance.	_____	_____
7. Determined the correct charge (lowest charge) and elevation for range determined.	_____	_____
8. Properly recorded all information on computer's record.	_____	_____
9. Correctly recorded rounds expended.	_____	_____
10. Recorded and computed the data for the FO correction using the criteria in 5, 6, 7, 8, and 9 above.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
DA FORM 2399

Related
FM 23-91

Compute Data for a Final Protective Fire Using a Plotting Board

071-078-0005

Conditions: As the computer, given a plotting board set up as a modified observed chart with a mortar position and reference point plotted; DA Form 2399, Computer's Record; firing table; No. 2 pencil; call for fire and forward observer (FO) corrections to adjust each mortar onto the final protective fire (FPF); and signal operating instructions (SOI) extract with KTC 1400* (numerical cipher/authentication system).

Standards: Computed data to establish the FPF to include deflection to within 1 mil with a 10-mil tolerance and range to within 25 meters with a 25-meter tolerance for each mortar. No round will impact more than 50 meters short of the FPF during adjustment.

Performance Steps

NOTE: The information in this task applies to the 4.2-inch, 60-mm, 81-mm, and 120-mm mortars. For the 60-mm, follow the instructions for the No. 1 and 2 mortars only.

1. The FPF is the highest priority mission fired by mortars. When the call to fire the FPF comes in, the section is ordered to check fire on any mission being conducted, to bring the mortars onto the FPF data, and to fire until given a cease fire or until all ammunition is exhausted. Therefore, care must be taken in planning, adjusting, and calling for the FPF to be fired.

NOTES:

1. The FPF is fired as a final effort to stop the enemy from overrunning the unit being supported. When the enemy is beyond 200 meters, an accurate determination cannot be made by the commander that the position will be overrun; therefore, firing all mortar ammunition would be unwise.
2. Should there be dead space or a likely avenue of approach beyond 200 meters that the commander wants covered, this should be plotted as a priority target.
3. During the hours of daylight, the mortars (when not firing) are laid on the priority target data.
4. During the hours of darkness or limited visibility, mortars (when not firing) are laid on the FPF data.
2. Because the FPF is adjusted close to friendly forces (no more than 200 meters in front), the FO uses the creeping method of adjustment.
3. During the adjustment, the fire direction center (FDC) fires fuze delay on all adjusting rounds to reduce the danger to friendly forces.

NOTE: The procedures written in this task are for a four-gun 81-mm mortar platoon. Those procedures will apply whether firing a two-gun section or a six-gun platoon.

4. Normal FPF adjustment:
 - a. Upon receiving the call-for-fire to adjust an FPF, the computer decodes and plots the target and computes the data to fire, based on the call-for-fire and FDC order (Figure 1).

EXAMPLE:

P88

ADJUST FIRE GRID

ZYFOPA

(010635)

FPF

ALTITUDE 0700

DANGER CLOSE

Performance Steps

COMPUTER'S RECORD											
For use of this form, see FM 23-91; the proponent agency is TRADOC											
ORGANIZATION <u>CO C 1/66</u>				DATE		TIME		OBSERVER ID <u>P88</u>		TARGET NUMBER <u>FPF</u>	
<input type="checkbox"/> ADJUST FIRE <input type="checkbox"/> FIRE FOR EFFECT <input checked="" type="checkbox"/> IMMEDIATE SUPPRESSION				SHIFT FROM _____				POLAR			
GRID <u>ENCODED 010635</u>				OT DIRECTION _____ ALTITUDE _____				OT DIRECTION _____ ALTITUDE _____			
OT DIRECTION <u>6320</u>				<input type="checkbox"/> LEFT / <input type="checkbox"/> RIGHT _____ <input type="checkbox"/> ADD / <input type="checkbox"/> DROP _____ <input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____				DISTANCE _____			
ALTITUDE <u>0700</u>								<input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____ VERTICAL ANGLE <input type="checkbox"/> + / <input type="checkbox"/> - _____			
TARGET DESCRIPTION <u>FPF ATT 0700</u>						METHOD OF CONTROL <u>SECTION LEFT</u>					
METHOD OF ENGAGEMENT <u>DANGER CLOSE</u>						MESSAGE TO OBSERVER					
FDC ORDER				INITIAL CHART DATA				INITIAL FIRE COMMAND			
MORTAR TO FFE <u>SEC</u>				DEFLECTION <u>2823</u>				MORTAR TO FOLLOW <u>SEC</u>			
MORTAR TO ADJ <u>SEC</u>				DEFLECTION CORRECTION <input type="checkbox"/> L <input type="checkbox"/> R				SHELL AND FUZE <u>HE DELAY</u>			
METHOD OF ADJ <u>1 RD S/L</u>				RANGE <u>1375</u>				MORTAR TO FIRE _____			
BASIS FOR CORRECTION _____				WALT CORRECTION <input type="checkbox"/> + <input type="checkbox"/> -				METHOD OF FIRE <u>1 RD</u>			
SHEAF CORRECTION _____				RANGE CORRECTION <input type="checkbox"/> + <input type="checkbox"/> -				DEFLECTION <u>2823</u>			
SHELL AND FUZE <u>HE D IN ADV</u> <u>HEQ IN FFE</u>				CHARGE/RANGE <u>2</u>				CHARGE <u>2</u>			
METHOD OF FFE <u>5 RDS</u>				AZIMUTH _____				TIME SETTING _____			
RANGE LATERAL SPREAD _____				ANGLE T <u>290</u>				ELEVATION <u>1006</u>			
ZONE _____											
TIME OF OPENING FIRE <u>AMC</u>											
OBSERVER CORRECTION			CHART DATA			SUBSEQUENT COMMANDS					
DEV	RANGE	TIME (HEIGHT)	DEFL	CHARGE (RANGE)	MORTAR FIRE	METHOD FIRE	DEFL	RANGE	CHARGE	TIME (SETTING)	ELEV
R50	100				#1		2791	1275		1080	(4)
	100						2810	1175		1140	(5)
	50						2825	1125		1167	(6)
	25	#1 ADJUSTED					2821	1150		1154	
	25	#2 ADJUSTED			#2		2821	1150		1154	(7)
	50	#3 ADJUSTED			#3		2821	1150		1154	(8)
	50	#4 ADJUSTED			#4		2821	1150		1180	
	50							1100		1180	(9)

DA FORM 2399, DEC 91

REPLACES DA FORM 2399, OCT 71 WHICH IS OBSOLETE

Figure 1. Example of Completed Call-for-Fire

Performance Steps

NOTES:

1. The FO always sends the FPF location in code.
2. When an FPF is adjusted by adjusting each mortar to its point in the FPF, the altitude given in the call-for-fire is not used by the computer.
3. The target location given in the call-for-fire is NOT the location of the FPF. A 200-meter to 400-meter safety factor has been added to the location of the FPF by the FO, and this is the location given in the call-for-fire. The computer NEVER adds a safety factor.
 - a. Upon receiving the initial fire command, the entire section fires one round of high explosive (HE) with delay fuze.
 - b. The FO observes the impact of the four rounds and determines which mortar's round impacted closest to the FPF line or to friendly forces. This mortar is referred to as the danger gun (Figure 2).
 - c. The FO then adjusts the danger gun onto its point on the FPF line using creeping fire.
 - d. The procedure for computing the data is the same for an FPF as for any other mission, except that the computer must keep in mind that it is a danger-close mission. The computer must recheck the data and ensure that the commands given to the guns are understood.
 - e. The adjustment procedure is continued for each individual mortar until the rounds from each mortar impact in the proper position on the FPF.

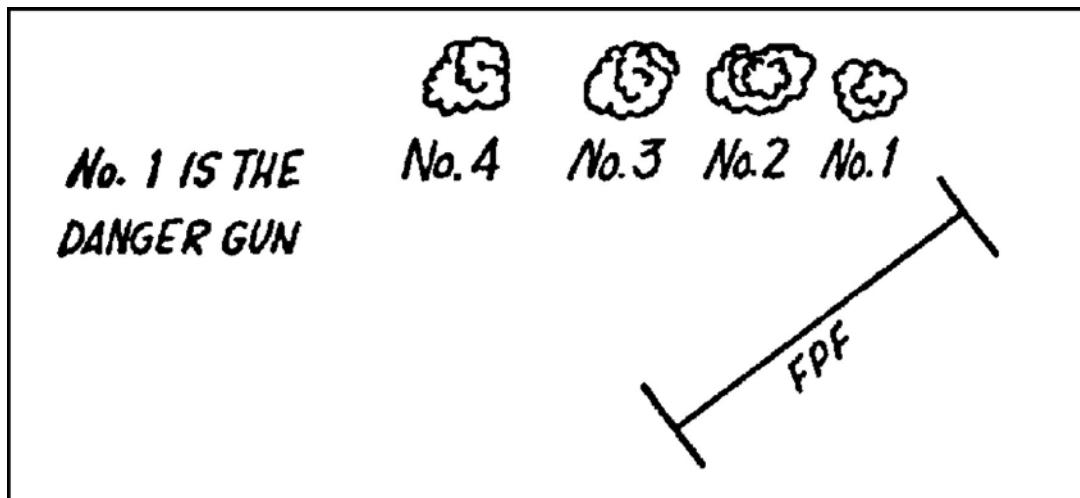


Figure 2. Danger Gun Depiction

5. To compute FPF data without adjustments, the computer performs the following:

NOTE: Using this procedure, the FO must be informed that adjustment will not be conducted. The FO then gives the exact location of the FPF in the call-for-fire.

- a. In some instances, there will not be time to adjust the FPF, or the commander may not wish to reveal the mortar's position by firing. Therefore, the FO sends the call-for-fire for the FPF, giving the grid center and altitude or grid for each end of the FPF.
- b. To plot grid center.
 - (1) Using the grid coordinate of the center of the FPF, the computer plots the location of the FPF on the plotting board. This plot represents only the No. 2 mortar's position on the FPF.

NOTE: The number of mortars allotted to the FPF will determine the plots the computer will use.

- (2) The computer plots the location of the No. 1, 3, and 4 mortars and determines the firing data for all three mortars.

EXAMPLE: (Figure 3)

The computer receives this call-for-fire:

C3A13

ADJUST FIRE GRID

Performance Steps

ADXHZY

(009629)

FPF

altitude 2990

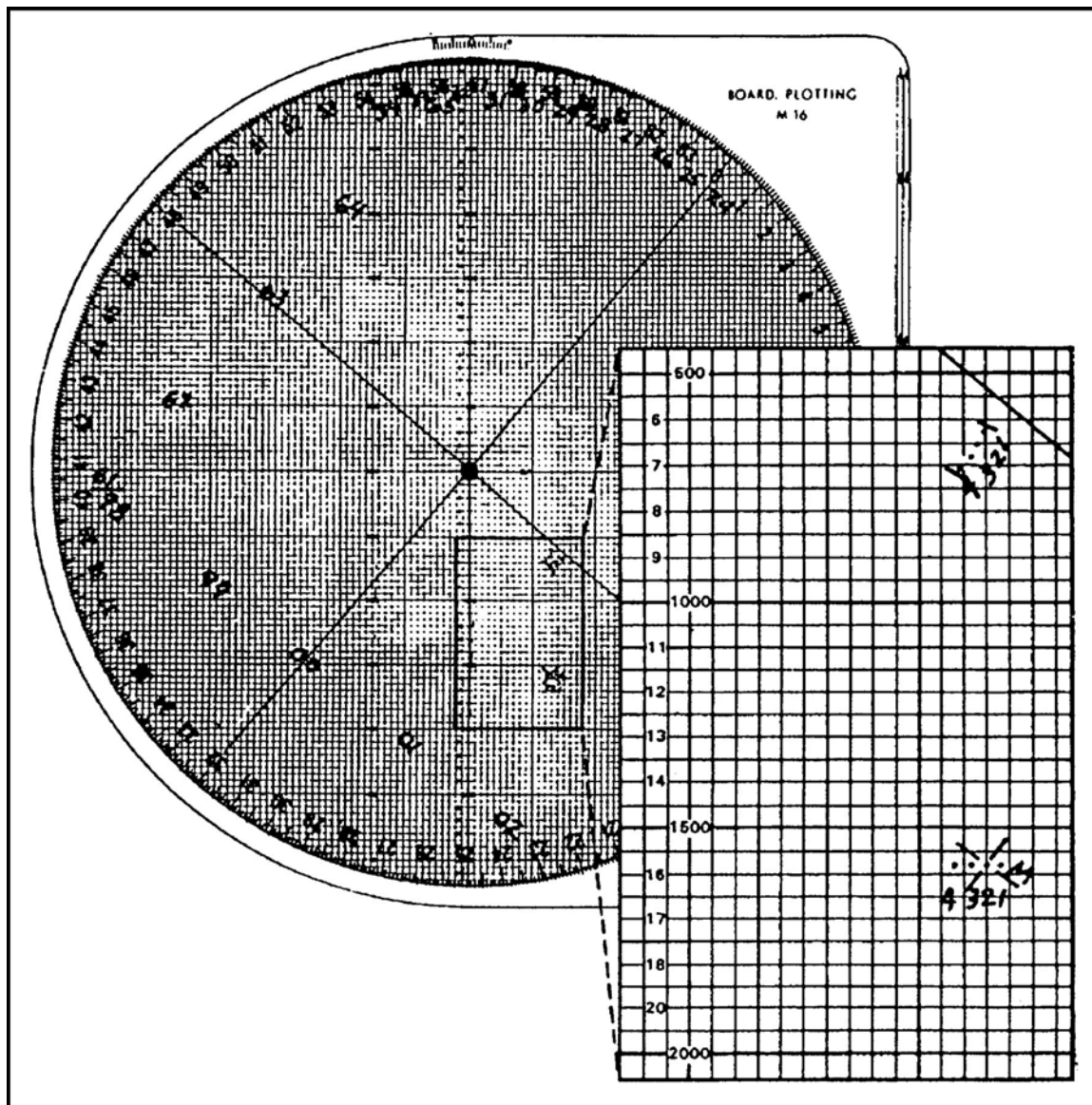


Figure 3. Corrected Firing Data

- (a) The computer decodes the grid location of the FPF, plots it on the plotting board, and indexes the FPF altitude at the index mark.
- (b) The computer now plots the location of the No. 1, 3, and 4 mortars. Keeping the altitude indexed, the computer goes 40 meters above the plot and makes a small plot; he then goes 40 meters below the first plot and makes another plot, then moves 40 meters below this plot and makes another plot. The computer now has four plots in a row, which represent the impact points of the four mortars on the FPF (Figure 3).

Performance Steps

- (c) Upon rotating the disk and aligning the FPF with the mortar, the computer sees that there are less than 40 meters between plots on the gun-target (G-T) line, which precludes firing a parallel sheaf.
 - (d) To determine the deflection and range to each point, the computer now plots the location of each mortar on the plotting board.
 - (e) Using the altitude (direction through the long axis of the mortar position) of the mortar section, indexed at the index mark, the computer again goes 40 meters above, and 40 meters and 80 meters below the plot in the center of the hollow cross marking the mortar position. By rotating the disk back and aligning the FPF and the mortar positions, the computer can easily tell which are the No. 1, 3, and 4 mortar plots and which plot on the FPF is each mortar's impact point (Figure 3).
 - (f) The computer aligns the plot for the No. 1 mortar and the No. 1 impact point, and he reads the deflection. This procedure is then used to determine the deflection for the other three mortars.
 - (g) Using the edge of the computer's record and alternate range scale, the computer determines the range for each mortar.
 - (h) This information is recorded, and each mortar is given its data for firing the FPF.
6. If a registration is conducted later and firing corrections are determined, the computer applies those corrections to update the FPF data.

Evaluation Preparation: SETUP: At the test site, provide all materials, equipment, and information given in the task condition statement. The test consists of two parts:

1. Compute data for an FPF adjustment by computing data for each mortar to place it in its position on the FPF.
2. Compute data for an FPF without adjustment using the altitude of the FPF given in the call for fire, and the altitude of the mortar section.

Brief Soldier: Tell the Soldier he will be tested on computing an FPF using two procedures:

1. Procedure 1: He will have all plotting equipment and materials, plus a computer's record with the call for fire recorded, the FDC order completed, and all FO corrections recorded. He must compute all data required, and record the final firing data for each mortar on a sheet of paper that is to be given to each squad leader.
2. Procedure 2: He will have all plotting equipment and materials, plus a computer's record with the call for fire recorded, and the FDC order completed. He must compute the data and record the firing data for each mortar on a sheet of paper that is to be given to each squad leader.

NOTE: For both procedures, there must be 500 to 1000 mils difference between the altitude of the FPF and the altitude of the mortars.

Performance Measures

NOTE: Not to be sequence scored.

1. Procedure 1:

- a. Correctly decoded FPF location.
- b. Correctly plotted FPF location.
- c. Correctly completed the heading and initial fire command.
- d. Correctly recorded rounds expended.
- e. Correctly computed data for all FO corrections.
- f. Correctly recorded each mortar's final firing data on a sheet of paper.

NOTE: All charges must be the lowest charge or elevation, deflection within 10 mils, and range within 25 meters or 1/8 charge.

2. Procedure 2:

- a. Correctly decoded FPF location.
- b. Correctly plotted FPF location.

GO NO GO

Performance Measures

GO **NO GO**

- c. Correctly indexed FPF altitude and plotted impact points for No. 1, 3, and 4 mortars.
- d. Correctly indexed the altitude of the mortar section and plotted the No. 1, 3, and 4 mortars.
- e. Correctly computed the firing data for each mortar.
- f. Correctly recorded each mortars' final firing data on a sheet of paper.

NOTE: All charges must be the lowest charge or elevation, deflection within 10 mils, and range within 25 meters or 1/8 charge.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
DA FORM 2399

Related
FM 23-91

Compute Data for Sheaf Adjustment Using a Plotting Board

071-078-0006

Conditions: 1. As the computer, given a plotting board (M16/M19) prepared for operation as a modified observed chart; to include coordinate system; deflection scale; mortar and registration point (RP) plotted; firing table; DA Form 2399, Computer's Record, completed for a registration mission; No. 2 pencil; deflection conversion table; and requirement to adjust the sheaf.

2. Given material and equipment as stated above and given a computer's record with a call for fire requesting an open or converged sheaf, or a target description requiring a special sheaf, and final adjusted data for the mission.

Standards: 1. Determined firing data for sheaf adjustment to include—

- Mil correction to 1 mil.
- Deflections to the nearest 1 mil with a 10-mil tolerance.

2. Computed data for open and converged sheafs by determining deflection for each mortar to the nearest mil with a 10-mil tolerance.

3. Computed data for a special sheaf—

- By determining deflection for each mortar to the nearest mil with a 10-mil tolerance.
- By determining range for each mortar to the nearest 25 meters with a 25-meter tolerance.

Performance Steps

NOTE: The information in this task applies to the 60-mm, 81-mm, and 120-mm mortars. For the 60-mm, follow the instructions for the No. 1 and 2 mortars only. For the 120-mm, add mortars 5 and 6 using the same procedures as used for No. 3 and 4 mortars.

- Definition and use. Individual weapon corrections for deflections, fuse settings, charges, and elevations are sometimes computed and applied to achieve a special pattern of bursts. The term sheaf denotes the lateral distribution of the bursts of two or more weapons fired together. The width of the sheaf is the lateral distance between the centers of the flank bursts. The front covered by any sheaf is the width of the sheaf plus the effective width of one burst. A sheaf may be in any one of the following forms (Figure 1):
 - Parallel sheaf. A parallel sheaf is one in which the trajectories of all weapons are parallel.
 - Converged sheaf. A converged sheaf is one in which the trajectories of all mortars intersect at the target.
 - Open sheaf. An open sheaf is one in which the lateral distance between the centers of any two adjacent bursts is equal to the maximum effective width of 1 1/2 bursts (60 meters).

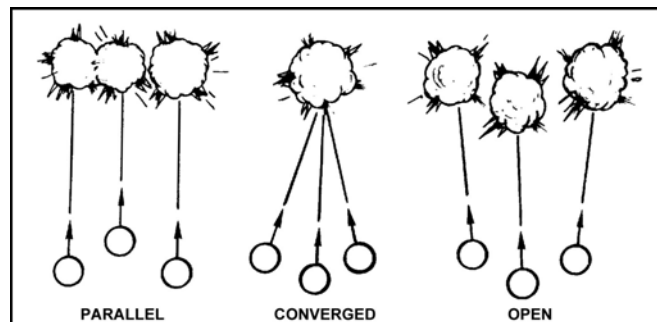


Figure 1. Types of Sheaths

2. Parallel sheaf.

- After registration by the base mortar, the computer directs the forward observer (FO) to adjust the sheaf. Although the mortars are laid parallel with a compass or aiming circle, the

Performance Steps

sheaf produced on the ground in the target area may not be parallel. This may be caused by the differences in the settling of the baseplates of the mortars or by improper boresighting.

- (1) There are two methods to adjust the sheaf. The method used depends on the location of the FO with respect to the gun-to-target (G-T) line (whether angle T is greater or less than 500 mils). The angle T is the difference between the azimuth of the G-T line and the azimuth of the observer target (OT) line.
- (2) Whenever possible, the computer selects an FO located near the G-T line so that angle T is less than 500 mils.
- b. For a parallel sheaf, the computer issues a fire command to No. 1, 3, and 4 mortars to fire a section right (or left) with the same adjusted deflection and elevation obtained by the No. 2 mortar. The FO sends back individual deviation corrections in meters for any burst that needs correcting to place it in the proper position in the sheaf. Using the mil-relation formula or the deflection conversion table, the computer changes those corrections in meters to mils. Those corrections are then applied to the deflection on the mortars. The mortars are re-laid on the aiming posts with the corrected deflection. Another section right (left) may be fired to recheck the sheaf.

NOTE: Any mortar with a correction of 50 meters or more is refired. When a parallel sheaf is attained, the computer notifies the gunners to refer all mortar sights to a common deflection and to realign aiming posts. This common deflection is the deflection for the base mortar (No. 2) to hit the RP. The computer disregards range errors when adjusting the sheaf. The range determined for the base mortar (No. 2) is used by all mortars in the section.

- c. For example, given a deflection of 2850 and a range of 1,200 meters, the FO's corrections are—
 NUMBER ONE, LEFT THREE ZERO
 END OF MISSION
 SHEAF ADJUSTED
 - (1) Mortars No. 3 and 4. Since the FO reported no corrections for the No. 3 and 4 mortars, their position in the sheaf is correct. The computer determines the correct deflection for mortar No. 1 as below.
 - (2) Mortar No. 1. The FO's correction of LEFT THREE ZERO (in meters) is equal to 25 mils at a range of 1,200 meters (using the mil-relation formula or the deflection conversion table). The left 25 mils is added (left add, right subtract [LARS] rule) to the deflection setting of 2850, because the FO's correction was left, and becomes 2875 mils. The computer issues the command, NUMBER ONE, DO NOT FIRE, DEFLECTION TWO EIGHT SEVEN FIVE. The gunner of mortar No. 1 indexes the new deflection on the sight and traverses back onto the aiming posts. When the mortar is laid, the computer issues the following command:
 SECTION
 REFER
 DEFLECTION TWO EIGHT FIVE ZERO
 REALIGN AIMING POSTS
 - (3) The gunner of mortar No. 1 refers his sight to a deflection of 2850 mils and directs the ammunition bearer in his squad to realign the aiming posts without moving the mortar. All mortars are then laid parallel with a common deflection of 2850 mils. Therefore, to fire a parallel sheaf on any target, each mortar of the section is given the same deflection—the one determined for the base mortar.

NOTE: If any of the other mortars have a compensated sight picture at this time, they would also realign aiming posts.

- d. The plotting board may be used to convert the FO's corrections from meters to mils for mortars out of sheaf. This technique eliminates the need for the computer to convert the FO's correction to mils using the mil-relation formula or deflection conversion table, and then apply the LARS rule to determine the deflection.
 - (1) Procedure. The FO's correction in meters for the mortar out of sheaf is plotted as a shift from the RP with the disk oriented on the OT azimuth, and the deflection is read at the centerline of the mortars out of sheaf. After the deflection has been determined, the plot

Performance Steps

is removed from the plotting board. The deflection determined would move the No. 2 mortar the distance specified by the FO in his correction. Since all mortars were fired with a common deflection, a deflection that would move the No. 2 mortar a specified distance would also move the No. 1, 3, and 4 mortars the same distance.

- (2) Sample problem. The section, mounted on an azimuth of 2000 mils, has completed registration with a range of 2,450 meters and a deflection of 2749 mils. The section fires for sheaf adjustment and the FO reports, "Number three, right three zero." The FO's azimuth is 2150 mils. To plot the correction, the computer rotates the disk to the FO's azimuth and makes a plot 30 meters to the right of the RP. He parallels the mortar position and the plot and determines the deflection (2737). This is the deflection that would move the No. 2 mortar 30 meters to the right. Since the No. 3 mortar has the same deflection on the sight as the No. 2 mortar, it also moves the No. 3 mortar 30 meters to the right.
- e. Angle T over 500 mils. After the base mortar has adjusted on the RP, the computer and FO coordinate adjusting a converged sheaf. The computer determines the firing data to converge the sheaf on the RP.
 - (1) The FO adjusts the other mortars onto the RP, one at a time. As can be seen, this is a long, drawn-out mission. Therefore, adjusting the sheaf when the angle T is over 500 mils should only be used when no other method can be used.
 - (2) The computer orients the plotting board on the O-T azimuth. He plots each correction with the plotting board oriented on that azimuth. He considers the RP as the plot for the first round from each of the mortars. After each mortar completes the adjustment, he erases all plots for No. 1, 3, and 4 mortars. The computer orients the board to the G-T azimuth, then places a plot 35 to 40 meters (the distance between mortars) left and right of the final adjusted plot of the No. 2 mortar and another plot 40 meters to the left of the No. 3 plot for No. 4. The range arm of the M16 plotting board can be used to determine the deflection for each mortar to open the sheaf when plotting from the pivot point. To do this, the range arm is rotated to the desired position to the right of the registration point, and the deflection is determined for the No. 1 mortar. The process is repeated to the left for the No. 3 and 4 mortars.
 - (3) After each mortar is laid with the correct deflection to form a parallel sheaf, the section is referred to a common deflection and the aiming posts are realigned.

3. Converged sheaf.

- a. The mortar section receives the following call for fire:

F1A25
 ADJUST FIRE POLAR
 DIRECTION 5350, DISTANCE 600
 MACHINE GUN POSITION WITH LIGHT
 OVERHEAD COVER; CONVERGE

The mortar section goes through a normal adjust mission until the FO's final correction of, "Add 25, fire for effect." At this point, the computer must determine a new deflection for the No. 1, 3, and 4 mortars to enable them to hit the same point as the No. 2 mortar.

- b. To do this, the computer uses the mil-relation formula or the deflection conversion table to convert the meter distance between the mortars to mils.

NOTE: Under normal emplacement, the mortars are 40 meters apart, and the sheaf has been adjusted so the rounds impact 40 meters apart.

To use the mil-relation formula, the computer must have the range to the target and the distances between mortars to find the mils. He does this as follows:

Range to target — 1,200 meters

Meters between mortars — 40 meters

$(33.3 / W) / (R \times \text{mils}) = 40 / 1.2 \times \text{mils} = 33 \text{ mils and } 400 / 12 = 33.3$

40 meters = 33 mils at 1,200 meters.

- c. To determine the new deflection for the No. 1, 3, and 4 mortars, the computer uses the LARS (left add, right subtract) rule.

Performance Steps

No. 2 (base mortar) deflection—2735 mils

Since the No. 1 mortar must move to the left, the computer adds the 33 mils to the base mortar deflection.

(Base deflection (No. 2) — 2735 mils) + (Deflection change — 33 mils) = (New deflection for No. 1 — 2768 mils).

The No. 3 mortar barrel must move to the right, so the computer subtracts the 33 mils to the base mortar deflection.

(Base deflection (No. 2) — 2735 mils) + (Deflection change -33 mils) = (New deflection for No. 3 — 2702 mils).

NOTE: The No. 4 mortar must also move to the right, but it must be moved 80 meters to the right.

Therefore, the computer must double the 33 mils to 66 mils.

(Base deflection (No. 2) — 2735 mils) + (Deflection change — -66 mils) = (New deflection for No. 4 — 2669 mils).

- d. The range remains the same for each mortar, but each mortar receives and fires a different deflection to allow all rounds fired to land on the same point.

4. Open sheaf.

- a. The FO has located a target that he believes is wider than a parallel sheaf will cover. He sends the following call for fire:

F1A25

ADJUST FIRE

GRID 176543

PLATOON IN TREE LINE

HEQ AND DELAY IN EFFECT

OPEN SHEAF

DIRECTION 1450

- b. The section goes through a normal adjust mission until the FO's final correction of, "Drop 25, fire for effect." At this point, the computer must determine a new deflection for each mortar to open the sheaf.

NOTE: An open sheaf is a sheaf opened half the distance between mortars. Normally, the mortars are 40 meters apart; thus, in an open sheaf, the rounds would land 60 meters apart.

- (1) To determine the new deflection for the No. 1, 3, and 4 mortars, the procedure is as follows:

Range to target — 2,000 meters

Meters between mortars — 40 meters

W/R x mils = $40/2.0 \times \text{mils} = 20 \text{ mils}$

$40/20 = 2$

40 Meters = 20 mils at 2,000 meters

- (2) A result of 20 mils moves the strike of the round 40 meters, but the computer only wants to move the strike of the round 20 meters. To do this, he must use only half the determined mils (10 mils) to move the strike of the round 20 meters for No. 1 and 3 mortars. However, for the No. 4, he must move the strike of the round 40 meters. He then applies the LARS rule.

No. 2 (base mortar) deflection—2815 mils.

- (3) Since the No. 1 mortar must move to the right, the computer subtracts the 10 mils:
(Base deflection (No. 2) — 2815 mils) + (Deflection change — -10 mils) = (New deflection for No. 1 mortar — 2805 mils)

The No. 3 mortar must move to the left, so add:

(Base deflection (No. 2) — 2815 mils) + (Deflection change — +10 mils) = (New deflection for No. 3 mortar — 2825 mils)

NOTE: The No. 4 must also move to the left, but it must move 20 mils (40 meters) to open.

(Base deflection (No. 2) — 2815 mils) + (Deflection change — +20 mils) = (New deflection for No. 4 mortar — 2835 mils)

5. Special sheaf using the plotting board.

Performance Steps

- a. A special sheaf is any sheaf other than an open, converged, or parallel sheaf. This can include a wide target that an open sheaf will not cover, or a target running parallel or diagonally to the G-T line.
- b. Normally, a special sheaf requires a different deflection for each mortar, and each mortar fires a different range to engage the target. The FO may include the attitude (azimuth through long axis of target) of the target in the call for fire, or give the grid of the two ends of the target.
- c. The computer receives the following call for fire:

F1A25

FFE, SHIFT 251

DIRECTION 0710, R100, ADD 100

THREE TRUCKS HALTED ON ROAD

50 x 100 METERS

ATTITUDE 1100

In the call for fire, the FO locates the target by giving the location of the center of target and saying the target is 100 meters long. He also gives the attitude of the target, which allows the computer to accurately plot the target.

NOTE: The following data were used in setting up the plotting board:

Grid intersection — 2551

Direction of fire — 0885

Mounting azimuth — 0900

Referred deflection — 2800

Mortar position grid — 24874976

(RP) point — 261508

Target (AA251) grid — 262513

Attitude (gun section) — 2450

- d. The data for a special sheaf are determined using the plotting board. Each mortar must be plotted on the board, as well as each expected point of impact of the rounds.
- e. The plotting board is set up as a modified observed chart (Figure 2).
 - (1) Using the grid intersection (2551), place a grid system on the plotting board.
 - (2) Plot the grid location of the mortar position and any other known points (RP, targets, and so forth).
 - (3) Rotate the disk and align the mortar plot and RP plot.
 - (4) Determine the direction of fire.
 - (5) Determine the mounting azimuth.
 - (6) Place the referred deflection scale on the disk.

Performance Steps

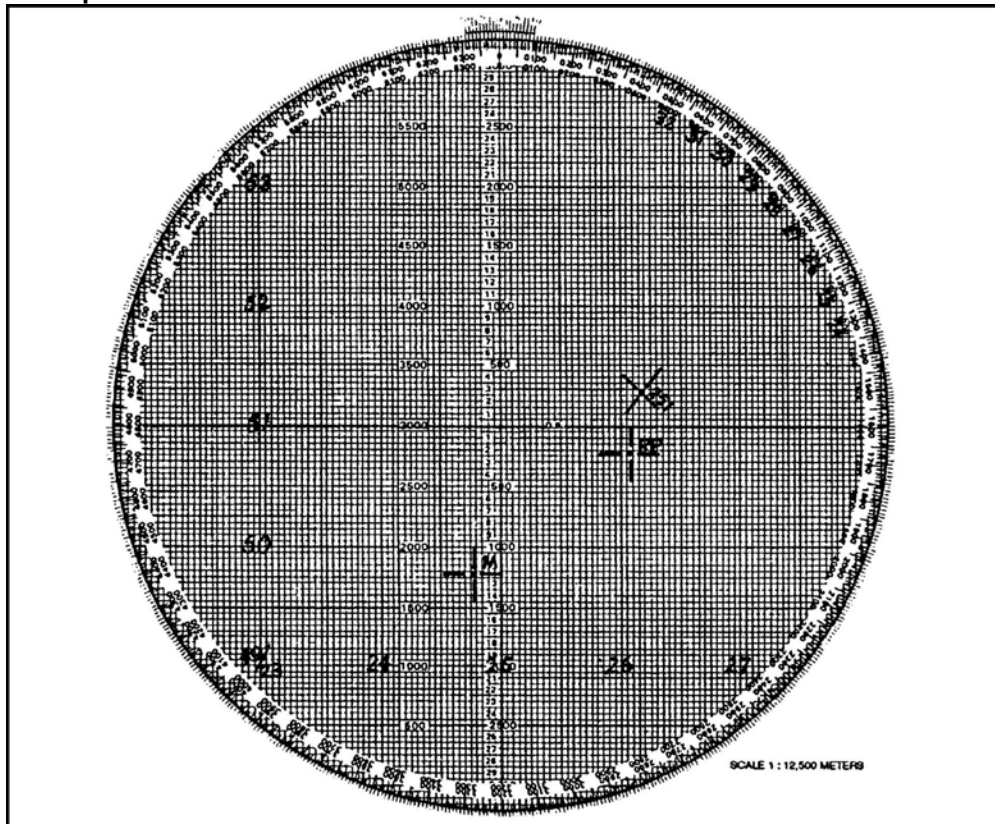


Figure 2. M16 Plotting Board Set Up as a Modified Chart

- f. In firing a special sheaf, each mortar normally fires with a different deflection and elevation. To determine these data, each mortar is plotted on the plotting board.
- (1) To plot the mortars on the plotting board, the attitude of the mortar section must be known.
 - (2) The attitude is the direction through the long axis of the gun section (Figure 3). Attitude is always determined to the nearest 100 mils and is always less than 3200 mils.
 - (3) To plot the mortars—
 - (a) Index the attitude of the gun section at the index mark.
 - (b) Locate the dot in the center of the hollow cross marking the mortar position. This represents the No. 2 mortar.
 - (c) To plot the No. 1 and 3 mortars, go 40 meters above (toward the top of the board) and 40 meters below (toward the bottom of the board) the No. 2 mortar plot and make small plots at those points to represent the No. 1 and 3 mortars. To plot the No. 4 mortar, go 80 meters below the No. 2 mortar plot (towards the bottom of the board) and make a small plot to represent the No. 4 mortar (Figure 4). Erase the arms of the hollow cross if they interfere with making those plots.
 - (d) At this point, it might be difficult to determine which is the No. 1 and which is the No. 3 and 4 mortar plots. By rotating the disk back to the mounting azimuth, the plots can easily be distinguished. The No. 1 mortar is always to the right of No. 2, and No. 3 and 4 mortars are to the left.
 - (e) The gun section is now plotted on the board exactly as on the ground in relation to the target area.

Performance Steps

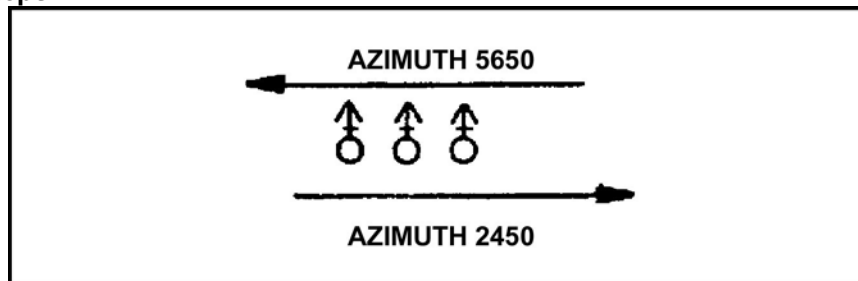


Figure 3. Attitude

- (4) To plot the impact points of the rounds on the target, use the same procedure as in plotting the gun section.

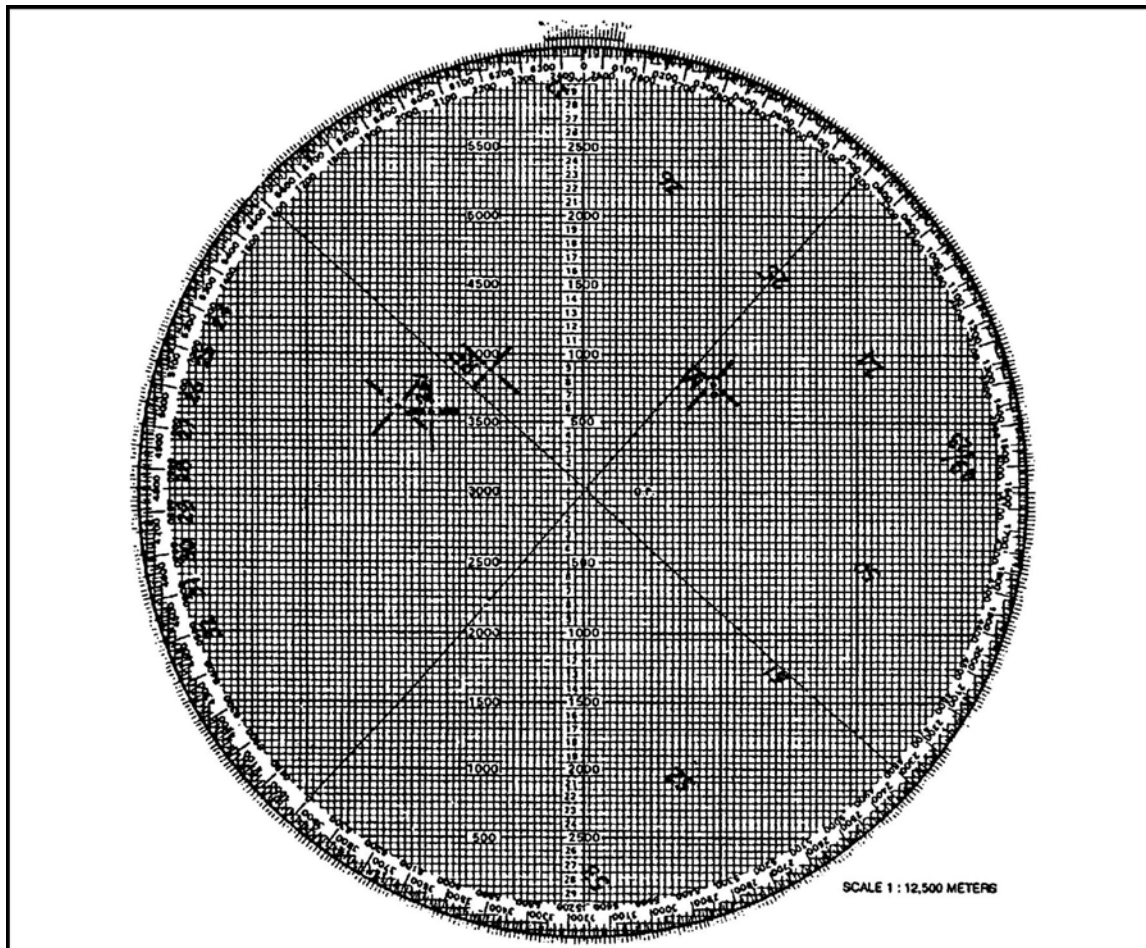


Figure 4. Plotting of No. 1, 3, and 4 Mortars

- (a) Index target attitude.
- (b) Go 40 meters above and below the target plot and make plots for impact points of No. 1 and 3 mortars, and then go 80 meters below the target plot to plot the No. 4 mortar impact point.
- (c) Again, by rotating the disk and aligning these impact plots with the gun section plots, it can be determined which mortar will be firing at which plot (Figure 5).

Performance Steps

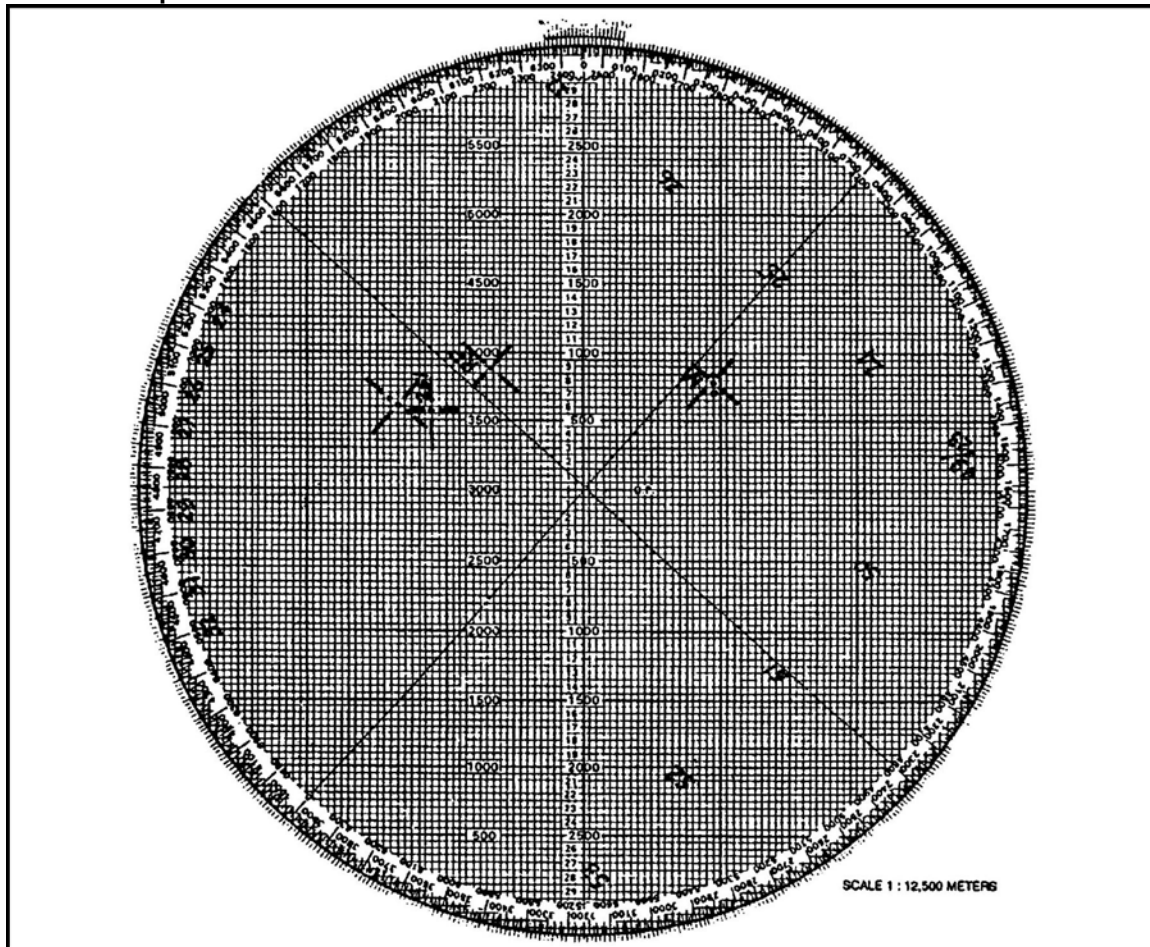


Figure 5. Points of Impact

- (5) To determine the deflection and range from each mortar to its impact point, align the No. 1 mortar with the No. 1 impact point. Read the deflection and determine the range. Repeat this procedure for each mortar.

Evaluation Preparation: SETUP: At the test site, provide all equipment, materials, and information given in the task condition statement. Also, provide a correction for one mortar that is out of sheaf less than 50 meters, and a correction for another mortar that is out of sheaf more than 50 meters. Also, provide three completed computer's records to include the final adjusted data. Computer's records will have a call for fire for an open sheaf, converged sheaf, and special sheaf.

Brief Soldier:

1. Tell the Soldier to use the equipment, materials, and information given, record the sheaf corrections, compute the data to correct the sheaf, and give the proper commands to the mortars to fire or not to fire. Tell the Soldier that he will be required to convert the meter corrections to mils using both the mil-relation formula and the deflection conversion table. Then, he must give the proper command to the mortars to realign the aiming posts.
2. Tell the Soldier to use the completed computer's records for an open sheaf, a converged sheaf, and a special sheaf, determine the data to converge the sheaf, to open the sheaf, or to fire a special sheaf. Tell him that he must use the mil-relation formula to compute the data for either the open or the converged sheaf, and the deflection conversion table to compute the data for the other mission, while the special sheaf data are determined by using the M16 plotting board.

NOTE: The Soldier is tested on correcting the sheaf and one of the other three methods of sheaf adjustment. For the 60-mm computer, he only determines data for two mortars.

Performance Measures

GO **NO GO**

NOTE: Do not score sequentially.

- | | | |
|--|-------|-------|
| 1. Parallel sheaf: | _____ | _____ |
| a. Correctly recorded the sheaf corrections on the computer's record. | | |
| b. Converted the meter corrections to mils using the mil-relation formula without error. | | |
| c. Converted the meter corrections to mils using the deflection conversion table without error. | | |
| d. Determined new deflection without error. | | |
| e. Refired mortar. | | |
| f. Used the proper fire commands. | | |
| 2. Converged sheaf: | _____ | _____ |
| a. Converted the meter distance between mortars to mils using the mil-relation formula. | | |
| b. Converted the meter distance between the mortars to mils using the deflection conversion table. | | |
| c. Determined the correct deflection for the No. 1 mortar. | | |
| d. Determined the correct deflection for the No. 3 mortar. | | |
| e. Determined the correct deflection for the No. 4 mortar. | | |
| 3. Open sheaf: | _____ | _____ |
| a. Converted the meter distance between mortars to mils using the mil-relation formula. | | |
| b. Determined the mil correction to move the mortar impact from 40 meters to 60 meters apart. | | |
| c. Determined the correct deflection for the No. 1 mortar. | | |
| d. Determined the correct deflection for the No. 3 mortar. | | |
| e. Determined the correct deflection for the No. 4 mortar. | | |
| 4. Special sheaf: | _____ | _____ |
| a. Plotted target at final adjusted data. | | |
| b. Indexed target attitude. | | |
| c. Plotted impact points for No. 1, 3, and 4 mortars. | | |
| d. Indexed mortar position attitude. | | |
| e. Plotted the No. 1, 3, and 4 mortars. | | |
| f. Determined deflection and range for No. 1 mortar. | | |
| g. Determined deflection and range for No. 3 mortar. | | |
| h. Determined deflection and range for No. 4 mortar. | | |

NOTE: Deflection for performance measures 4f, 4g, and 4h above have a 10-mil tolerance for deflection and 25 meters for range.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
DA FORM 2399

Related
FM 23-91

Compute Data for a Traversing and/or Searching Mission Using a Plotting Board

071-078-0007

Conditions: As a computer; given a plotting board; data to set up the board as a modified observed chart; DA Form 2399, Computer's Record; No. 2 pencil; paper; firing table; and call for fire for a wide or deep target.

- Standards:**
1. Determined deflection to within 1 mil with a 10-mil tolerance.
 2. Determined range to within 25 meters with a 25-meter tolerance.
 3. Determined turns to nearest half turn.
 4. Determined charge to 1/8 charge.

Performance Steps

NOTE: The information provided in this task applies to all mortars. For 60-mm, use only the information for the No. 1 and 2 mortars. For a six-gun platoon, use the procedure used for the No. 3 and 4 mortars to determine the data for the No. 5 and 6 mortars.

1. Application.
 - a. Traversing or searching fire is used by mortars when the target is wider or deeper than can be engaged by a parallel sheaf. Wide or deep targets are engaged by using a distributed fire for effect (FFE). This means that the mortar will be manipulated for elevation or deflection between rounds until the number of rounds given in the fire command has been fired. The 4.2-inch mortar will vary range using charges.
 - b. To effectively engage a target using traversing fire (Figure 1), the attitude of the target cannot be more than 100 mils different than the attitude of the mortar section.

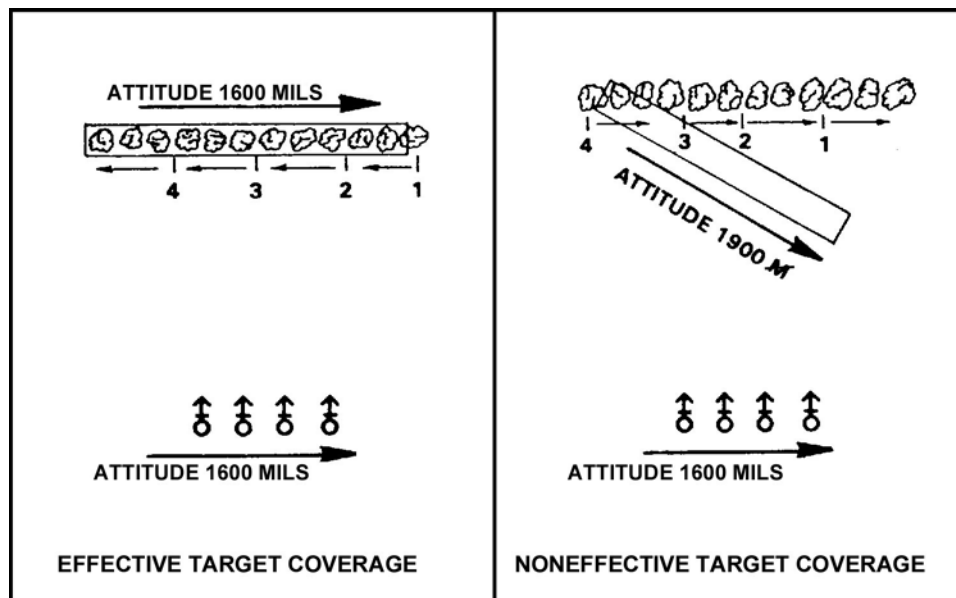


Figure 1. Target Coverage

- c. To effectively engage a target using searching fire (Figure 2), the attitude of the target cannot be more than 100 mils different than the azimuth of the gun-target line.

Performance Steps

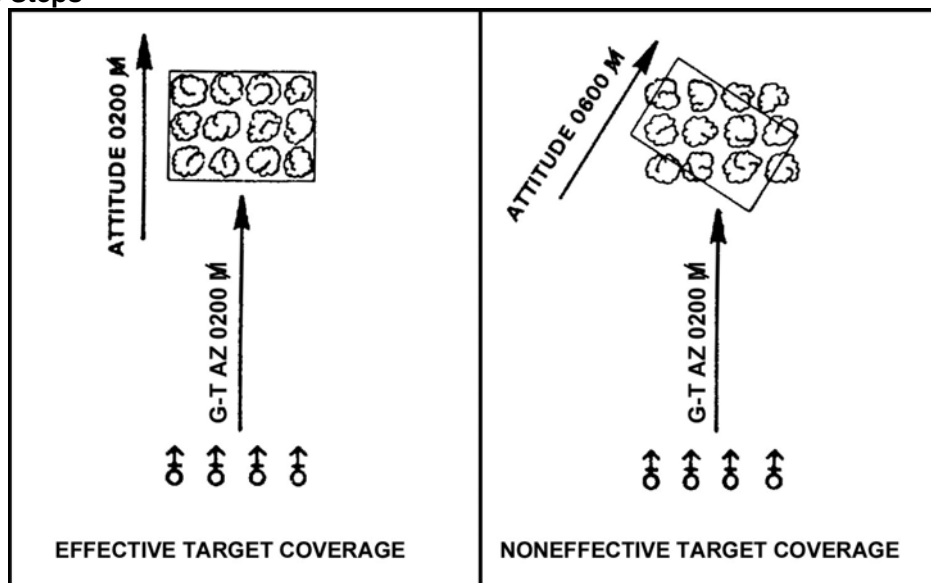


Figure 2. Target Coverage

2. Traversing fire.

- a. Upon receiving the call for fire, the section sergeant determines that, from the size and description of the target, traversing fire must be used to cover it. He then completes the fire direction center (FDC) order on DA Form 2399 (Figure 3).

COMPUTER'S RECORD				
For use of this form, see FM 23-91; the proponent agency is TRADOC				
ORGANIZATION <u>CO A 1/66 INF</u>	DATE <u>9 NOV</u>	TIME <u>1425</u>	OBSERVER ID <u>F2E35</u>	TARGET NUMBER <u>AA0355</u>
<input checked="" type="checkbox"/> ADJUST FIRE <input type="checkbox"/> FIRE FOR EFFECT <input type="checkbox"/> IMMEDIATE SUPPRESSION		SHIFT FROM _____ OT DIRECTION _____ ALTITUDE _____ <input type="checkbox"/> LEFT / <input type="checkbox"/> RIGHT _____ <input type="checkbox"/> ADD / <input type="checkbox"/> DROP _____ <input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____		
GRID <u>158911</u> OT DIRECTION <u>6320</u> ALTITUDE _____		POLAR OT DIRECTION _____ ALTITUDE _____ DISTANCE _____ <input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____ VERTICAL ANGLE <input type="checkbox"/> + / <input type="checkbox"/> - _____		
TARGET DESCRIPTION <u>INF IN CREEK BED 400 X 50 AT 1150</u>				
METHOD OF ENGAGEMENT			MESSAGE TO OBSERVER	
FDC ORDER		INITIAL CHART DATA		INITIAL FIRE COMMAND
MORTAR TO FFE <u>SEC</u>		DEFLECTION <u>3038</u>		MORTAR TO FOLLOW <u>SEC</u>
MORTAR TO ADJ <u>#4</u>		DEFLECTION CORRECTION <input type="checkbox"/> L <input type="checkbox"/> R		SHELL AND FUZE <u>HEQ</u>
METHOD OF ADJ <u>IRD</u>		RANGE <u>1925 - 50 = 1875</u>		MORTAR TO FIRE <u>#4</u>
BASIS FOR CORRECTION _____		WALT CORRECTION <input type="checkbox"/> + <input checked="" type="checkbox"/> 100		METHOD OF FIRE <u>IRD</u>
SHEAF CORRECTION _____		RANGE CORRECTION <input type="checkbox"/> + <input checked="" type="checkbox"/> 50		<u>5RDS PROX IN EFFECT</u>
SHELL AND FUZE <u>HEQ IN ADJ</u> <u>PROX IN EFFECT</u>		CHARGE/RANGE <u>3/1825</u>		DEFLECTION <u>3038</u>
METHOD OF FFE <u>5RDS</u>		AZIMUTH _____		CHARGE <u>3</u>
RANGE LATERAL SPREAD _____		ANGLE T <u>430</u>		TIME SETTING _____
ZONE _____				ELEVATION <u>962</u>
TIME OF OPENING FIRE <u>N/R</u>				
				① HE

Figure 3. Example of Completed Traversing Fire Order

Performance Steps

- b. With the completed FDC order, the computer must now compute the data to fire the mission (Figure 4).

[illegible]

Figure 4. Computed Firing Data

- (1) From the FDC order, the computer knows that No. 4 mortar will be used to adjust on the left flank of the target.

NOTES:

1. The following data were used to set up the plotting board:

Grid intersection — 1590

Direction of fire — 6085 mils

Mounting azimuth — 6100 mils

Mortar position — 16808945

Mortar position attitude — 1100 mils

Mortar altitude — 400 meters

Target altitude — 300 meters

Referred deflection — 2800 mils

2. Before this mission can be computed, the four mortars must be plotted individually at the mortar position. During the mission, the computer ensures that the correct plots are used to determine the data required; in other words, during the adjustment, the impact points are aligned with the No. 4 mortar plot.

- (2) Using the information in the call for fire, FDC order, and observer corrections, the computer computes the data to adjust the No. 4 mortar onto the left flank of the target and records it on DA Form 2399 (Figure 4).

- c. After the adjustment is complete, the computer must—

- (1) Plot the 400-meter length of the target on the plotting board using the attitude of the target.

Performance Steps

- (2) Divide the target into segments.
 - (3) Determine the mil width of one segment.
 - (4) Determine the number of turns it will take to cover one segment.
 - (5) Determine the number of turns between rounds.
- d. The computer determines each of these items as follows:
- (1) To plot the target on the plotting board, the computer rotates the azimuth disk until the target attitude (taken from the call for fire) is indexed. The computer erases all the plots except the last. Being sure that the attitude is indexed, the computer makes a plot 100 meters above that adjustment plot, then another plot 100 meters above the plot followed by one last plot 100 meters above that plot. These plots represent the start points for each mortar. The area between the plots, and for 100 meters beyond the last plot, is the area each mortar must cover with fire (Figure 5).
 - (2) The target is now divided into four segments. By determining the remaining data for one segment, the data will apply to all four mortars.
 - (3) Since each segment of the target is 100 meters wide, if the computer determines the mil width of one segment, the other three will be the same. At this time, the computer has the deflection that it took to hit the adjusting point on the target by the No. 4 mortar (adjusting mortar) (Figure 4). By aligning the adjusting mortar plot with the No. 3 plot on the target, the computer can now determine the deflection from the adjusting mortar to the start point of No. 3 mortar on the target.

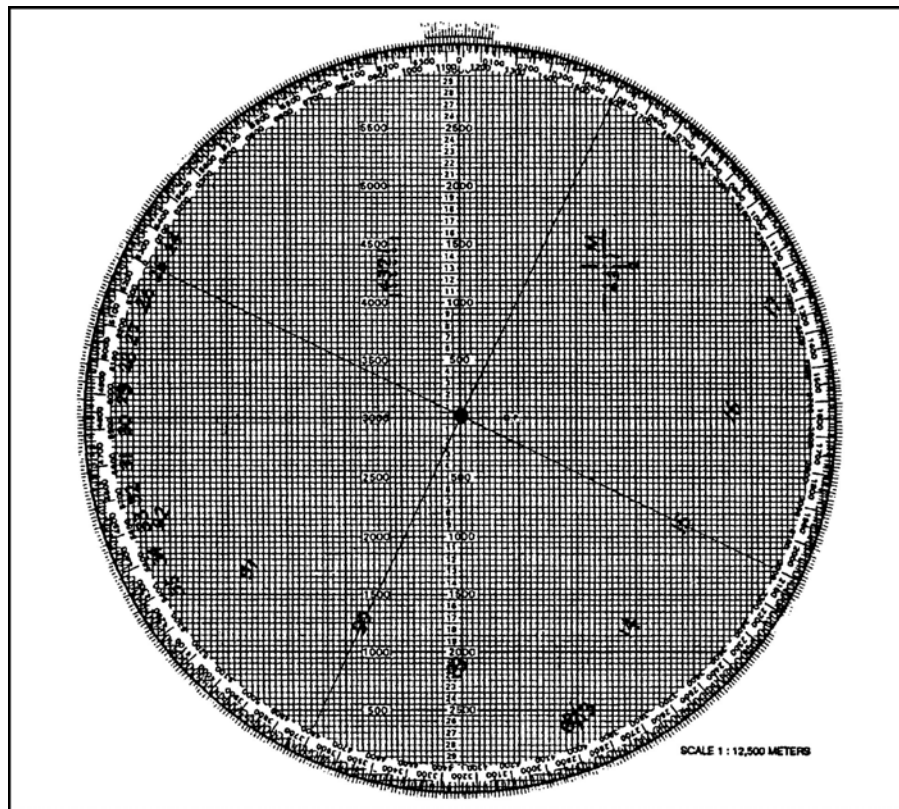


Figure 5. Plotting Firing Data on M16 Plotting Board

NOTE: The deflection determined from the adjusting mortar to the No. 3 plot on the target is only used to determine the mil width of one segment of the target. Do not use this deflection for firing data.

- (4) By subtracting these two deflections, the computer can determine the mil width of the segment.

Performance Steps

(No. 4 plot deflection — 2997 mils) + (No. 3 plot deflection — -2940 mils) = (Mil width of segment — 57 mils)

- (5) Each turn of the traversing handwheel is 10 mils. Dividing the mil width of the segment (57 mils) by 10 gives the computer the total number of turns to cover the segment:
 $57/10 = 5.7$ rounded off to 6 total turns

NOTES:

1. 120-mm mortar: For the 120-mm mortar, each turn of the traversing handwheel is only 5 mils.
2. 60-mm mortar: When the bipod is in the upper saddle of the barrel, one turn of the traversing handwheel equals 10 mils; when in the lower saddle, one turn equals 15 mils. The upper saddle is used when firing less than 1100 mils elevation. The lower saddle is used when firing more than 1100 mils elevation.

- (6) To compute the number of turns to take between each round, the computer must know how many rounds will be fired for each segment. This information is in the FDC order (four rounds). To determine the turns between rounds, divide the total turns by the interval between rounds (there will always be one less interval than the number of rounds: 4 rounds = 3 intervals).
 $6/3 = 2 = 2$ turns between rounds

NOTES:

1. Turns are rounded to the nearest half turn.
 2. The number of rounds to fire is based on the rule: 4 rounds per 100 meters of target width, or 1 round per 30 meters.
- (7) At this point, the computer has only to determine the deflection for No. 1, 2, and 3 mortars, complete the subsequent command, and issue it to the mortar section (Figure 6). To do this, the computer aligns the No. 3, 2, and 1 mortars with their start points on the target and reads the deflection for each mortar. During this procedure, the computer should also determine the range for each mortar to its start point. If there is a range difference of 25 meters or more, the elevation for that mortar must reflect the range difference.

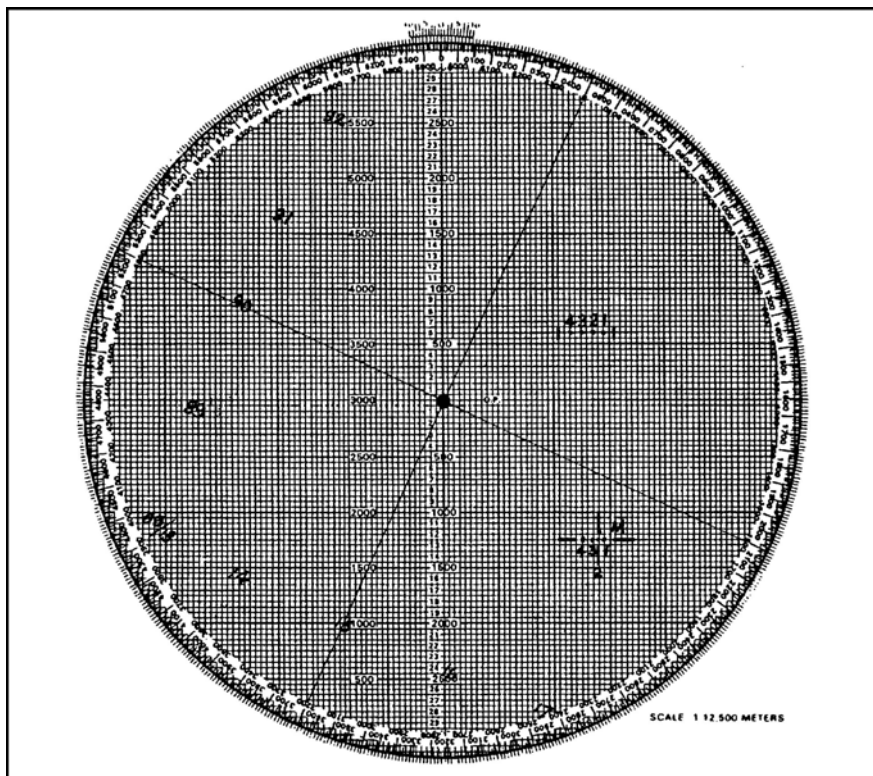


Figure 6. Computed Deflection Data

Performance Steps

NOTE: Upon completion of the adjustment phase of the mission, the section is given the command, PREPARE TO TRAVERSE RIGHT (LEFT). The gunners traverse the mortar all the way in the opposite direction of that given, back off two turns (120-mm backs off four turns), and await instructions.

- (8) As shown in Figure 7, each mortar is firing a different deflection, but the same charge and elevation. When the last round is fired, the mortars are left as laid and the squad again awaits instructions. As shown in Figure 7, the forward observer (FO) came back with, REPEAT. Rather than fire the mission as it was fired the first time by traversing right, the computer gives the command to traverse left.

COMPUTER'S RECORD											
For use of this form, see FM 23-91; the proponent agency is TRADOC											
ORGANIZATION <u>A 166</u>			DATE <u>9 NOV</u>		TIME <u>1425</u>		OBSERVER ID <u>F2E35</u>		TARGET NUMBER <u>AA0355</u>		
<input checked="" type="checkbox"/> ADJUST FIRE <input type="checkbox"/> FIRE FOR EFFECT <input type="checkbox"/> IMMEDIATE SUPPRESSION			SHIFT FROM _____			POLAR					
GRID _____			OT DIRECTION _____ ALTITUDE _____			OT DIRECTION _____ ALTITUDE _____			DISTANCE _____		
OT DIRECTION _____			<input type="checkbox"/> LEFT / <input type="checkbox"/> RIGHT <input type="checkbox"/> ADD / <input type="checkbox"/> DROP <input type="checkbox"/> UP / <input type="checkbox"/> DOWN			<input type="checkbox"/> UP / <input type="checkbox"/> DOWN VERTICAL ANGLE <input type="checkbox"/> + / <input type="checkbox"/> - _____					
ALTITUDE _____											
TARGET DESCRIPTION <u>INF IN CREEK BED 400 X 50 AT 1150</u>						METHOD OF CONTROL _____					
METHOD OF ENGAGEMENT _____						MESSAGE TO OBSERVER _____					
FDC ORDER		INITIAL CHART DATA				INITIAL FIRE COMMAND				ROUNDS EXPENDED	
MORTAR TO FFE <u>SEC</u>		DEFLECTION <u>3038</u>				MORTAR TO FOLLOW <u>SEC</u>				①	
MORTAR TO ADJ <u>#4</u>		DEFLECTION CORRECTION <input type="checkbox"/> L <input type="checkbox"/> R				SHELL AND FUZE <u>HEQ</u>					
METHOD OF ADJ <u>IRD</u>		RANGE <u>1925 - 50 = 1875</u>				MORTAR TO FIRE <u>#4</u>					
BASIS FOR CORRECTION <u>—</u>		WALT CORRECTION <input type="checkbox"/> + <input checked="" type="checkbox"/> 100				METHOD OF FIRE <u>IRD</u>					
SHEAF CORRECTION <u>—</u>		RANGE CORRECTION <input type="checkbox"/> + <input checked="" type="checkbox"/> 50				DEFLECTION <u>3038</u>					
SHELL AND FUZE <u>HEQ IN ADJ</u>		CHARGE/RANGE <u>3</u>				CHARGE <u>3</u>					
<u>HE PROX IN EFFECT</u>		AZIMUTH <u>—</u>				TIME SETTING <u>—</u>					
METHOD OF FFE <u>4 RDS</u>		ANGLE T <u>430</u>				ELEVATION <u>962</u>					
RANGE LATERAL SPREAD <u>—</u>											
ZONE <u>—</u>											
TIME OF OPENING FIRE <u>W/R</u>											
OBSERVER CORRECTION			CHART DATA			SUBSEQUENT COMMANDS					
DEV	RANGE	TIME (HEIGHT)	DEFL	CHARGE (RANGE)	MORTAR FIRE	METHOD FIRE	DEFL	RANGE	CHARGE	TIME (SETTING)	ELEV
R100	200		3037	1700			3037	1650		1095	②
R25	100		3003	1775		AMC	3003	1725		1057	③ HEQ
	50	FFE	1825		SEC 400 PROX		2997	1775		1029	
					TRUS RIGHT		2940	1775		1029	
					2 TURNS		#2889	1775		1029	
							#2832	1775		1029	④ PROX
REPEAT					SEC	5 RDS TRUS LEFT					⑤ PROX
						2 TURNS					
CEASE FIRE - ENEMY RETREATING OR UNKNOWN											

DA FORM 2399, DEC 91 REPLACES DA FORM 2399, OCT 71 WHICH IS OBSOLETE

Figure 7. Completed Call-for-Fire

Performance Steps

3. Searching/zone fire.

- a. In firing a searching zone mission, the adjustment phase of the mission is the same as a regular adjust mission, using the base mortar (No. 2) as the adjusting mortar, except that the mortar is adjusted on either the near end or far end of the target—normally, the far end.

NOTE: The following data were used to set up the plotting board:

Grid intersection — 1590
 Direction of fire — 6085 mils
 Mounting azimuth — 6100 mils
 Mortar position — 16808945
 Mortar altitude — 400 meters
 Target altitude — 370 meters
 Referred deflection — 2800 mils

- b. Upon completion of the adjustment phase of the mission, the computer now computes the data to cover the target with fire. The computer must—
 - (1) Determine the mil length (depth) of the target.
 - (2) Determine the number of turns it will take to cover the target.
 - (3) Determine the number of turns between rounds.

- c. The computer determines each of those items as follows:

NOTE: The following procedures apply only to the 60-mm and 120-mm mortars.

- (1) To determine the mil length of the target, the computer must use the firing table. He subtracts the elevation to hit the near end of the target from the elevation for the far end of the target (adjusting point, 1002).

Range to adjusting point — 2,250, Elevation — 1002
 Range to near end — 2,025, Elevation — 1101
 [1101 - 1002 = (Length of target) 99 mils]
- (2) Each turn of the elevation crank is 10 mils. Dividing the mil length of the target (99 mils) by 10 gives the computer the total turns needed to cover the target:
 $99.0/10 = 9.9$ rounded up to 10 (total turns)
- (3) To compute the number of turns to take between each round, the computer must know how many rounds will be fired by each mortar. This information is in the FDC order (8 rounds). To determine the turns between rounds, divide the total turns by the intervals between rounds (there is always one less interval than the number of rounds: 8 rounds = 7 intervals).
 $10/7 = 1.4$ rounded to 1 1/2 (turns between rounds)

NOTES:

1. Turns are rounded to the nearest half turn.
2. The number of rounds to fire is based on the rule: 4 rounds per 100 meters of target depth, or 1 round per 30 meters.

- d. At this point, the computer has all the information needed to complete the subsequent command and issue it to the mortars (Figure 8).

Performance Steps

Three rounds will be fired. To have one round fall 50 meters beyond the adjustment point, the computer adds $\frac{3}{8}$ charge to the base charge of $21 \frac{5}{8}$ — $21 \frac{5}{8} + \frac{3}{8} = 22$. For the round to fall short of the base round, the computer subtracts $\frac{3}{8}$ charge, $21 \frac{5}{8} - \frac{3}{8} = 21 \frac{2}{8}$. When fired with this data, the rounds will impact about 50 meters apart (Figure 9).

Target description: COMPANY ASSEMBLY AREA, 200 x 200. For this target, the FO adjusted on the center of the target, with No. 2 mortar firing a charge of $28 \frac{3}{8}$. Five rounds will be fired. The computer must now compute data to place rounds 50 meters and 100 meters beyond and 50 meters and 100 meters short of the base round: 100 meters over $28 \frac{3}{8} + 1 = 29 \frac{3}{8}$; 50 meters over $28 \frac{3}{8} + \frac{4}{8} = 28 \frac{7}{8}$; Base round charge $28 \frac{3}{8}$; 50 meters short $28 \frac{3}{8} - \frac{4}{8} = 27 \frac{7}{8}$; 100 meters short $28 \frac{3}{8} - 1 = 27 \frac{3}{8}$; By firing five rounds at these charges, the target area (200 x 200) will be fully covered (Figure 10).

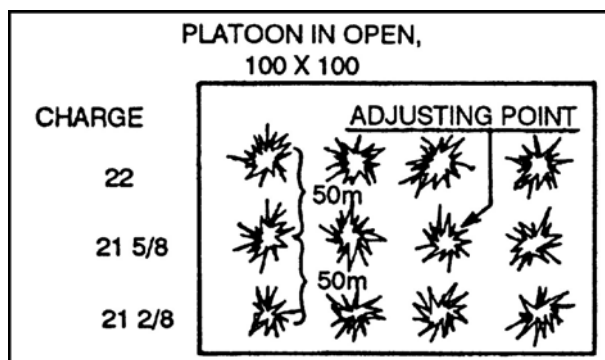


Figure 9. Completed Fire-for-Effect Data

NOTE: Charges of $25 \frac{4}{8}$ or above are fired with extension; those below $25 \frac{4}{8}$ are fired without extension.

- (3) When firing the fire for effect, the crews will mix the rounds to cause a scattered fire for effect on the target.

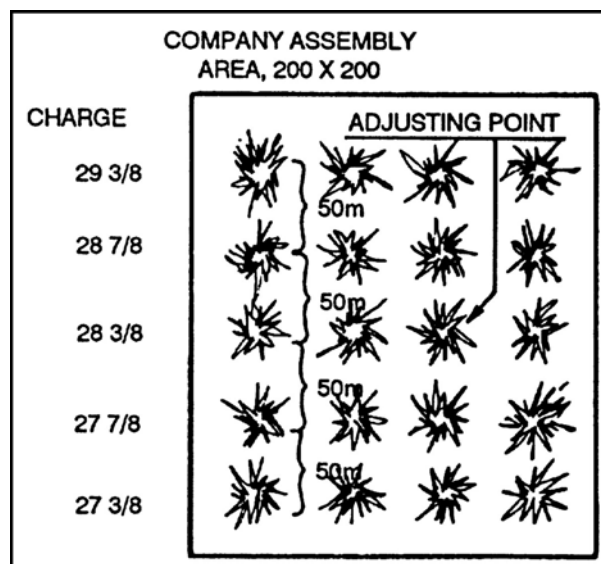


Figure 10. Company Fire-for-Effect

Evaluation Preparation: SETUP: At the test site, provide a plotting board set up as a modified observed chart with mortar position plotted, and final plots for two targets. Target No. 1 is for a traversing mission; target No. 2 is for a search mission. Provide a completed computer's record for the adjustment phase of each mission, plus all other materials given in the task conditions statement.

Brief Soldier: Tell the Soldier that, using the materials and information given, he will compute the final firing data for a traversing mission and then the final firing data for a search mission.

Performance Measures

GO **NO GO**

NOTE: Not to be sequence scored.

- | | |
|---|---------------------------|
| <p>1. Traversing mission:</p> <ul style="list-style-type: none"> a. Told the mortars, "Prepare to traverse right (left)." b. Plotted the location of No. 2, 3, and 4 mortars, or No. 1, 2, and 3 mortars, using the mortar position attitude. c. Plotted the meter length of the target using the target attitude. d. Divided the target length into four equal segments and plot those points on the plotting board. e. Determined the mil width of one segment of the target (within 5 mils). f. Determined the number of turns to cover one segment of the target. g. Determined the number of turns between rounds (nearest half turn). h. Determined the deflection to each mortar start point. i. Issued the correct fire command to the mortars to fire the traverse part of the mission. | <p>_____</p> <p>_____</p> |
| <p>2. Searching/zone mission:</p> <ul style="list-style-type: none"> a. Searching mission (60-mm, 81-mm, 120-mm). <ul style="list-style-type: none"> (1) Computed the mil length of the target using the elevation to the near end and far end of the target. (2) Determined the number of turns to cover the target. (3) Determined the number of turns between rounds. (4) Issued the correct fire command to the mortars to fire the search part of the mission. b. Zone mission (4.2-inch mortar). <ul style="list-style-type: none"> (1) Determined charge per 50 meters. (2) Determined number of rounds to use (based on target description). (3) Determined charge for each round. | <p>_____</p> <p>_____</p> |

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

DA FORM 2399
FM 23-91

Compute Data for an Illumination Mission Using a Plotting Board

071-078-0008

Conditions: As a computer, given a plotting board set up as a modified observed chart with mortar position and registration point (RP) plotted; DA Form 2399, Computer's Record; firing table; No. 2 pencil; paper; call for fire for an illumination mission; and two forward observer (FO) corrections.

Standards: Compute data to place illumination over the target area to include deflections to the nearest mil with a 10-mil tolerance; ranges to the nearest 25 meters with a 25-meter tolerance; and fuze settings to within one-tenth of a second. For the 4.2-inch mortar, charge to 1/8 charge with a 1/8-charge tolerance.

Performance Steps

NOTE: The information contained in this task has limited data that can be used with the 60-mm mortar. Due to the fixed time of function for the 60-mm illumination, time settings are not used.

1. Purpose of illumination. Battlefield illumination provides friendly forces with light to assist them in ground operations at night. The light provided by the mortar illumination round also allows the FO to detect targets of opportunity or enemy activity in the area. The indiscriminate use of illumination can give away friendly operations as well as reveal enemy operations. Therefore, the fire direction center (FDC), as well as the FO, must keep abreast of friendly activity within their area of responsibility.
2. Types of illumination.
 - a. The amount of illumination required for a particular mission depends on the observer-target (OT) distance, conditions of visibility, and the size and shape of the area to be illuminated.
 - b. The FO may request any of the following patterns of illumination rounds. Therefore, the computers must be able to compute the data to provide the pattern requested.
 - (1) One-gun illumination. Most illumination missions are fired by one mortar. In firing one-gun illumination, the remaining mortars are available to fire high explosive (HE), should a target be detected.
 - (2) Two-gun illumination. This pattern is used when more light is needed than one round can provide. In providing this pattern, one round each is fired from two different guns (normally, the flank mortars). The rounds are set to burst at the same time.

NOTE: Mortars may normally fire this pattern by firing two rounds as quickly as possible from one mortar.

- (3) Two-gun illumination, range spread. This pattern is used when the area to be illuminated has greater depth than width. When this pattern is called for, the computer computes the data for one mortar to fire rounds 250 meters beyond the target (location given by the FO) on the gun-to-target (G-T) line, and data for one mortar to fire rounds 250 meters short of this point on the G-T line. This procedure causes rounds to burst 500 meters apart.

NOTE: For the 4.2-inch and the 120-mm mortar, use 500 meters in place of 250 meters.

- (4) Two-gun illumination, lateral spread. This pattern is used when the area to be illuminated has greater width than depth. When this pattern is called for, the computer computes the data for one mortar to fire rounds 250 meters to the left of the target (location given by the FO), and data for one mortar to fire rounds 250 meters to the right of the target. This procedure causes rounds to burst 500 meters apart.

3. Computing illumination data.
 - a. The computer receives the following call for fire:



A3K17
 ADJUST FIRE POLAR
 DIRECTION 6080
 DISTANCE 400
 VEHICLE NOISE
 SUSPECTED CONVOY
 ILLUMINATION

The computer begins computing the data to fire an illumination round over the target area to aid the FO in determining whether there is enemy activity in his area.

Performance Steps

- b. Upon the completion of the FDC order, the computer knows which mortar will be firing the illumination and which will be firing HE, should it be called for.
- c. The procedure for plotting and computing illumination is the same as for HE, with two exceptions.
 - (1) When plotting illumination rounds on the plotting board, the computer makes the plot and instead of placing a circle around it, he places a square around it (Table 1). This identifies illumination from HE rounds when plotting both illumination and HE for the same mission. Should it become necessary to plot both HE and illumination on the same point, this symbol is used (Table 1).

Table 1. Plot Symbols

Illumination Round Plot Symbol	
HE Round Plot Symbol	

- (2) The firing table is used to determine the time of flight, corrections for time of flight, corrections for elevation, and range to impact.
 - (a) Time of flight is found in column 3 (Figure 1) under the heading FUZE SETTING. It is the time placed on the fuze of the illumination round.

CHARGE 3						
FT 81-AI-3 CTG, ILLUMINATING, M371A3 FUZE, TIME, M84A1						
1	2	3	4	5	6	7
RANGE TO BURST	ELEV	FUZE SETTING	CHANGE IN ELEV FS FOR 60M INCREASE IN HEIGHT OF BURST		MAX ORD	RANGE TO IMPACT
M	MILS		MILS		M	M
100	1467	6.3	14	0.7	800	413
150	1404	6.4	21	0.7	600	600
200	1344	6.5	27	0.7	600	788
250	1498	19.7	-4	-0.8	846	321
300	1476	19.7	-5	-0.8	842	388
350	1455	19.6	-6	-0.8	837	451
400	1433	19.4	-7	-0.8	832	517
450	1410	19.3	-9	-0.8	825	583
500	1388	19.1	-10	-0.9	818	651
550	1362	18.9	-12	-0.9	809	719
600	1337	18.7	-15	-1.0	799	788
650	1309	18.4	-18	-1.1	787	860
700	1280	18.1	-24	-1.2	774	934
750	1248	17.7	-34	-1.5	758	1012
800	1211	17.2			737	1098
850	1166	16.4			710	1195

NOTE - FOR RANGES UP TO 200 METERS THE BURST WILL APPEAR ON THE ASCENDING BRANCH OF THE TRAJECTORY.

Figure 1. FT 81-AI-3

- (b) As the FO adjusts the rounds over the target area, the computer uses the corrections for time of flight and elevation found in columns 4 and 5 (Figure 1) to keep the burst of the round at the same height and over the same point on the ground. (This column is used to bring the round up or down.)
- (c) The range to impact found in column 7 (Figure 1) is used to determine how far the round would travel if the round malfunctions and fails to separate.

Performance Steps

- d. In handling this mission, the computer has the plotting board set up as a modified observed chart with mortars, reference point, and FO position plotted.
- (1) Using the target location given in the call for fire, the computer plots the target location (Figure 2) and determines the range and deflection to the target.

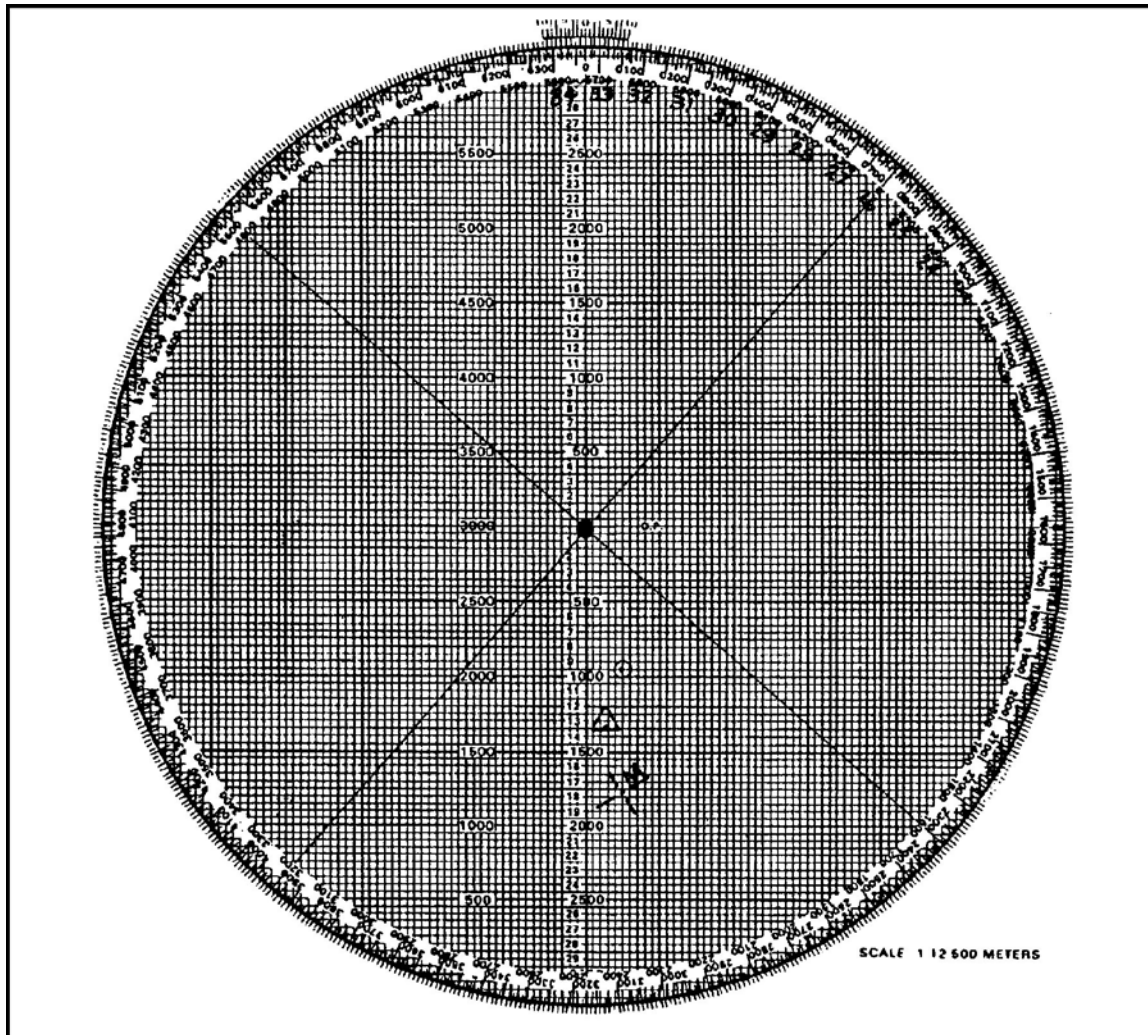


Figure 2. Target Location

- (2) The computer now uses the firing table to complete the initial fire command.
- (a) Range - Column 1.
 - (b) Elevation - Column 2.
 - (c) Fuze setting - Column 3.

NOTES:

1. Because of the large area illuminated by the illumination round, angle T is neither computed nor used for illumination adjustment.
2. Ranges given in the firing table for the 81-mm and 120-mm mortars are given in 50-meter increments. All ranges determined are rounded up to the next 50 meters. For the 4.2-inch mortar, enter the firing table at the range determined. If this range is not found, round the range up to the next higher range given.

EXAMPLE:

RANGE — ROUNDED RANGE

925 ----- 950

Performance Steps

1,475 ----- 1,500

- (3) Because of the size of the area illuminated by the flare, range and deviation corrections of less than 200 meters should normally not be made. Height-of-burst corrections are made in multiples of 50 meters.
- e. Upon completion of the initial fire command, the round is fired and recorded in the rounds expended (RDS EXP) column on DA Form 2399 (Figure 3).

COMPUTER'S RECORD				
For use of this form, see FM 23-91; the proponent agency is TRADOC				
ORGANIZATION <i>A-166</i>	DATE <i>9 JUN</i>	TIME <i>2360</i>	OBSERVER ID	TARGET NUMBER
<input type="checkbox"/> ADJUST FIRE <input type="checkbox"/> FIRE FOR EFFECT <input type="checkbox"/> IMMEDIATE SUPPRESSION		SHIFT FROM _____ OT DIRECTION _____ ALTITUDE _____ () LEFT / <input type="checkbox"/> RIGHT _____ <input type="checkbox"/> ADD / <input type="checkbox"/> DROP _____ <input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____		
GRID _____ OT DIRECTION _____ ALTITUDE _____		POLAR OT DIRECTION <i>6080</i> ALTITUDE _____ DISTANCE <i>400</i> <input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____ VERTICAL ANGLE <input type="checkbox"/> + / <input type="checkbox"/> - _____		
TARGET DESCRIPTION <i>VEHICLE NOISE</i>			METHOD OF CONTROL	
METHOD OF ENGAGEMENT			MESSAGE TO OBSERVER	
PDC ORDER		INITIAL CHART DATA		INITIAL FIRE COMMAND
MORTAR TO FFE <i>#4</i>		DEFLECTION <i>3310</i>		MORTAR TO FOLLOW <i>#4</i>
MORTAR TO ADJ <i>—</i>		DEFLECTION CORRECTION <input type="checkbox"/> L <input type="checkbox"/> R		SHELL AND FUZE <i>ILLUM</i>
METHOD OF ADJ <i>1 RD</i>		RANGE <i>825</i>		MORTAR TO FIRE <i>—</i>
BASIS FOR CORRECTION <i>—</i>		WALT CORRECTION <input type="checkbox"/> + <input type="checkbox"/> -		METHOD OF FIRE <i>1 RD</i>
SHEAF CORRECTION <i>—</i>		RANGE CORRECTION <input type="checkbox"/> + <input type="checkbox"/> -		DEFLECTION <i>3310</i>
SHELL AND FUZE <i>ILLUM</i>		CHARGE/RANGE <i>3</i>		CHARGE <i>3</i>
METHOD OF FFE <i>—</i>		AZIMUTH <i>—</i>		TIME SETTING <i>16.4</i>
RANGE LATERAL SPREAD <i>—</i>		ANGLE T <i>—</i>		ELEVATION <i>1105</i>
ZONE <i>—</i>				
TIME OF OPENING FIRE <i>W/R</i>				
OBSERVED CORRECTION		CHART DATA		SUBSEQUENT COMMANDS
				ROUNDS EXPENDED <i>1</i>

Figure 3. Rounds Expended Recorded on Computer's Record

- f. The FO then sends the following correction, RIGHT FOUR HUNDRED, ADD TWO HUNDRED, DOWN ONE HUNDRED.
- (1) The correction of RIGHT FOUR HUNDRED, ADD TWO HUNDRED is plotted in the normal manner (same as HE), and the data are recorded in the chart data blocks on DA Form 2399 (Figure 4).

Performance Steps

FUZE, TIME, M84A1						
1	2	3	4	5	6	7
RANGE TO BURST	ELEV	FUZE SETTING	CHANGE IN ELEV FS FOR 50M INCREASE IN HEIGHT OF BURST		MAX ORD	RANGE TO IMPACT
M	MILS		MILS		M	M
100	1456	5.1	13	0.5	600	579
150	1386	5.2	19	0.5	600	840
200	1320	5.3	25	0.5	600	1073
250	1258	5.4	30	0.5	600	1274
300	1200	5.6	34	0.4	600	1444
350	1498	24.6	-2	-0.5	1114	412
400	1483	24.5	-2	-0.5	1111	471
450	1468	24.4	-3	-0.5	1107	531
500	1453	24.4	-3	-0.5	1102	590
550	1437	24.3	-3	-0.5	1097	649
600	1422	24.2	-4	-0.5	1091	709
650	1405	24.1	-4	-0.6	1085	769
700	1389	24.0	-5	-0.6	1078	829
750	1372	23.8	-5	-0.6	1071	890
800	1355	23.7	-6	-0.6	1062	951
850	1338	23.6	-7	-0.6	1053	1012
900	1320	23.4	-7	-0.6	1043	1074
950	1301	23.2	-8	-0.6	1032	1137
1000	1281	23.0	-9	-0.7	1020	1200
1050	1261	22.8	-11	-0.7	1007	1264
1100	1240	22.5	-12	-0.7	992	1329

Figure 5. Data for Time Fuze M84A1

- (6) The corrections given in columns 4 and 5, as stated at the top of the columns, are for 50-meter increases in height of burst. In using those corrections, the computer first determines the number of 50-meter increments the FO requested in his UP and DOWN correction. For this mission, the FO requested, DOWN ONE HUNDRED; this would be two 50-meter increments.
- (7) By knowing that the corrections given in the firing table are for 50-meter increments, and that the FO's correction was DOWN ONE HUNDRED, the computer doubles the corrections given in the firing table. This gives the following corrections:

ELEVATION ----- TIME SETTING

$$-9 \times 2 = -18 \text{ mils} \quad -0.7 \times 2 = -1.4 \text{ seconds.}$$

As stated at the top of the columns, these corrections as shown are for an INCREASE in height of burst, and both carry a minus sign (-). Since the FO's correction was DOWN ONE HUNDRED, the computer must reverse the signs. The corrections would be +18 mils and +1.4 seconds.

Performance Steps

NOTE: When a number carries no sign, it is a plus (+).

- (8) The computer must now apply the corrections to the elevation and time settings given in the firing table:

ELEVATION ----- TIME SETTING

$$1281 + +18 = 1299 \qquad 23.0 + +1.4 = 24.4$$

The results are recorded in the subsequent command blocks on DA Form 2399 (Figure 6).

[illegible]

Figure 6. Subsequent Commands

NOTE: For the 4.2-inch mortar, the procedure is the same for the time setting. For a range change, the firing table gives the change in charges. Compute the change in charge in the same manner as the mils in elevation are determined.

- (9) The FO's next correction is DOWN FIFTY and is recorded on DA Form 2399 (Figure 6). After recording the correction, the computer must again determine the corrections for elevation and time setting. Again, the corrections are based on the 600-meter (400 meters) height of burst and the total number of 50-meter increments in all FO corrections.

EXAMPLE: If the FO had requested “Up fifty” as the last correction, the computer would add the DOWN 100 and the UP 50:

The computer would be working with only one 50-meter increment.

$$-100 + 50 = -50$$

However, in the mission fired, the FO's last correction was DOWN 50. By adding all height corrections, the computer determines the new height-of-burst correction:

$$-100 - 50 = -150$$

The computer is now working with three 50-meter increments. The computer multiplies the height-of-burst correction (Figure 7) to apply to the firing data and records it on DA Form 2399.

EXAMPLE:

ELEVATION

$(-9 \times 3 = -27 \text{ mils} = +27 \text{ mils})$

$(1281 + 27 = 1308)$

TIME SETTING

$$(-0.7 \times 3 = -2.1 = +2.1)$$

$$(23.0 + 2.1 = 25.1)$$

This again is recorded and the round is fired. The FO then comes back with his next transmission (Figure 8). The computer records this information on DA Form 2399.

Performance Measures

GO

NO GO

4. Use correct sign (+ or -) when applying corrections to time and elevation settings (or charge) for each FO correction.

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required

DA FORM 2399

Related

FM 23-91

Compute Data for a Coordinated Illumination Mission Using a Plotting Board

071-078-0009

Conditions: As a computer, given a plotting board set up as a modified observed chart with mortar position, reference point and suspected target upon which illumination has been adjusted and plotted; completed DA Form 2399, Computer's Record for the illumination mission; computer's record with the fire direction center (FDC) order completed; DA Form 2188-R, Data Sheet; No. 2 pencil; paper; call for fire for a coordinated illumination mission; and three forward observer (FO) corrections.

Standards: Computed data for the adjustment of high explosive (HE) on the target, and provided illumination for the HE adjustment. Determined the deflections to the nearest mil with a 10-mil tolerance; ranges to the nearest 25 meters with a 25-meter tolerance; and fuse settings to within one-tenth of a second. For the 4.2-inch mortar, charged to 1/8 charge with a 1/8-charge tolerance.

Performance Steps

NOTE: The information contained in this task has limited data that can be used with the 60-mm mortar. Due to the fixed time of function for the 60-mm illumination, time settings are not used.

1. Compute Data for an Illumination Mission Using a Plotting Board, helps identify a suspected target in the FO's area of responsibility. When a target is identified, the FO must then call the FDC to have the target fired on. At this point, the FO has adjusted the illumination over the target area and identified a target (Figure 1). He must then initiate a call for fire for the target in the normal manner (Figure 2). The computer records this data on DA Form 2399.
2. Since the illumination has been adjusted over the target area and the computer has received the call for fire for coordinated illumination, he determines the data to take the target under fire.
3. In the mark method (the most used), the FO may tell the FDC that he will be giving the illumination mark on the next round of illumination, or the FDC may tell the FO to give it on the next illumination round. Either way, the FO and FDC must know when it will be given.
 - a. When the illumination has been adjusted to provide the best light on the target, the FO gives the command, MARK ILLUMINATION. The FDC has been timing the flight of the round from the time it was fired until the command, MARK. The HE time of flight taken from the firing table is subtracted from that time. This remainder is the number of seconds the HE is fired after the illumination.

NOTE: When determining the time to fire the HE, drop all tenths before all computations (example 19.7 = 19).

EXAMPLE:

TIME FROM FIRING TO ILLUMINATION MARK	HE TIME OF FLIGHT	TIME TO FIRE HE
53 seconds	19 seconds	34 seconds

The HE will be fired 34 seconds after the illumination is fired.

Figure 1. Adjusted Illumination Over Target

Performance Steps

COMPUTER'S RECORD				
For use of this form, see FM 23-91; the proponent agency is TRADOC				
ORGANIZATION <u>A 1/66</u>	DATE <u>12 AUG</u>	TIME <u>2320</u>	OBSERVER ID <u>F2 346</u>	TARGET NUMBER <u>BK 110</u>
<input checked="" type="checkbox"/> ADJUST FIRE <input type="checkbox"/> FIRE FOR EFFECT <input type="checkbox"/> IMMEDIATE SUPPRESSION	SHIFT FROM _____		POLAR	
GRID _____	OT DIRECTION _____ ALTITUDE _____		OT DIRECTION _____ ALTITUDE _____	
OT DIRECTION _____	<input type="checkbox"/> LEFT / <input type="checkbox"/> RIGHT _____		DISTANCE _____	
ALTITUDE _____	<input type="checkbox"/> ADD / <input type="checkbox"/> DROP _____		<input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____	
	<input type="checkbox"/> UP / <input type="checkbox"/> DOWN _____		VERTICAL ANGLE <input type="checkbox"/> + / <input type="checkbox"/> - _____	
TARGET DESCRIPTION <u>TRUCKS ON ROAD</u>			METHOD OF CONTROL _____	
METHOD OF ENGAGEMENT <u>SHIFT RIGHT 100 - 50</u>			MESSAGE TO OBSERVER _____	
FOC ORDER		INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE <u>1, 2, 3</u>		DEFLECTION <u>3188</u>	MORTAR TO FOLLOW <u>2</u>	<u>MARK TIME</u> <u>53 SEC</u> <input type="checkbox"/> ILLUM <input checked="" type="checkbox"/> HE
MORTAR TO ADJ <u>2</u>		DEFLECTION CORRECTION <input type="checkbox"/> L <input type="checkbox"/> R	SHELL AND FUZE <u>HEQ</u>	
METHOD OF ADJ <u>1RD</u>		RANGE <u>750</u>	MORTAR TO FIRE <u>—</u>	
BASIS FOR CORRECTION <u>—</u>		WVALT CORRECTION <input type="checkbox"/> + <input type="checkbox"/> -	METHOD OF FIRE <u>1RD AMC</u>	
SHEAF CORRECTION <u>—</u>		RANGE CORRECTION <input type="checkbox"/> + <input type="checkbox"/> -	<u>(733) 3RDS IN FFE</u>	
SHELL AND FUZE <u>HEQ</u>		CHARGE/RANGE <u>1</u>	DEFLECTION <u>3188</u>	
METHOD OF FFI: <u>3RDS</u>		AZIMUTH _____	CHARGE <u>1</u>	
RANGE LATERAL SPREAD <u>—</u>		ANGLE Y <u>200</u>	TIME SETTING <u>—</u>	
ZONE <u>—</u>			ELEVATION <u>1185</u>	
TIME OF OPENING FIRE <u>AMC</u>				

Figure 2. Completed Call-for-Fire on Computer Screen

- b. In firing a coordinated mission, the computer uses a new computer's record to record the coordinated illumination mission (Figure 2). The mark time is shown recorded in the rounds expended (RDS EXP) column. The computer also records in that column that an illumination round and HE round have been fired. The data used to fire the first illumination round were taken from the computer's record that was used to adjust the illumination mission (Figure 1).
- c. In sending corrections, the FO precedes each correction with the type of round the correction is for—for example, ILLUMINATION, UP FIFTY; HE, RIGHT FIFTY, ADD FIFTY. Those corrections are recorded on separate lines on DA Form 2399 (Figure 3). In computing data for illumination, the computer uses the computer's record for the illumination mission (Figure 1) to keep track of the number of 50-meter increments that have been used to adjust the illumination.

Figure 3. Round Corrections

e. By requesting the continuous illumination, the computer is telling the FDC that he wants the target illuminated during the fire for effect, and illuminated afterward to allow him to make his target surveillance.

4. Upon completion of the mission, the data are recorded on DA Form 2188-R (Figure 4).

Figure 4. Completed Mission Data

Evaluation Preparation:

SETUP: At the test site, provide all equipment, materials, and information given in the task condition statement.

Brief Soldier: Tell the Soldier to compute the data to fire a coordinated illumination mission. At the end of the mission, give the Soldier the FO's target surveillance and have him complete the data sheet.

Performance Measures	<u>GO</u>	<u>NO GO</u>
NOTE: Not to be sequence scored.		
1. Recorded the call for fire and FO corrections on the computer's record.	_____	_____
2. Computed initial data and complete the heading and the initial fire command to tolerances given in the task standards.	_____	_____
3. Determined the correct mark time to fire the HE.	_____	_____
4. Determined the correct number of 50-meter increments to correct the elevation (charge) and time for the illumination round.	_____	_____
5. Computed the firing data for each FO correction to tolerances given in the task standards.	_____	_____
6. Properly recorded the final subsequent fire command for continuous illumination and fire for effect.	_____	_____
7. Correctly recorded data on the data sheet.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required**

DA FORM 2188-R

DA FORM 2399

Related

FM 23-91

Compute Data for a Quick-Smoke Mission Using a Plotting Board

071-078-0011

Conditions: As a computer, given a plotting board set up as a modified observed chart with the mortar position and the registration point (RP) plotted; DA Form 2399, Computer's Record; 4.2-inch smoke card; call for fire for a quick-smoke mission; paper; pencils; and relative humidity, temperature gradient, wind speed, and whether winds are heading, tailing, quartering, or crossing.

Standards: 1. Computed the adjustment data for each adjusting round; determined deflection to within 1 mil with a 10-mil tolerance; range to within 25 meters with a 25-meter tolerance.

2. Determined the exact number of white phosphorus (WP) rounds required to smoke the target as required by the call for fire and weather conditions in the target area.

3. Determined the time interval between rounds during the maintaining phase of the mission.

Performance Steps

NOTES:

1. Quick-smoke is a screening smoke mission used to place a curtain of smoke between enemy observers and friendly units to mask friendly maneuvers, or to deceive and confuse the enemy as to the nature of friendly operations. (Quick-smoke missions are normally directed by higher headquarters.)

2. Quick-smoke missions are normally planned missions because WP rounds are a small part of the basic load. Therefore, more WP ammunition must be requested to fire the mission. The computer determines the number of rounds the mission requires based on the worst conditions likely to exist at the time the mission is fired.

1. The computer computes a quick-smoke mission.

a. The quick-smoke mission is computed the same as a high-explosive (HE) area-type mission (parallel sheaf) with the following exceptions (Figure 1).

(1) The upwind flank mortar is the adjusting mortar for the mission.

(2) The last adjusting round is a WP round (adjusting phase).

(3) Final corrections are made by the forward observer (FO) and the fire direction center (FDC) based on the WP round. Final data are given to the mortar crews, and the crews are told to stand by to fire for effect (FFE).

(4) During this wait, the crews are informed how the mission will be fired, and how many rounds each mortar will have prepared to fire.

b. The FDC recomputes the number of WP rounds required to fire the mission based on the requirements in the call for fire and the weather conditions in the area.

Performance Steps

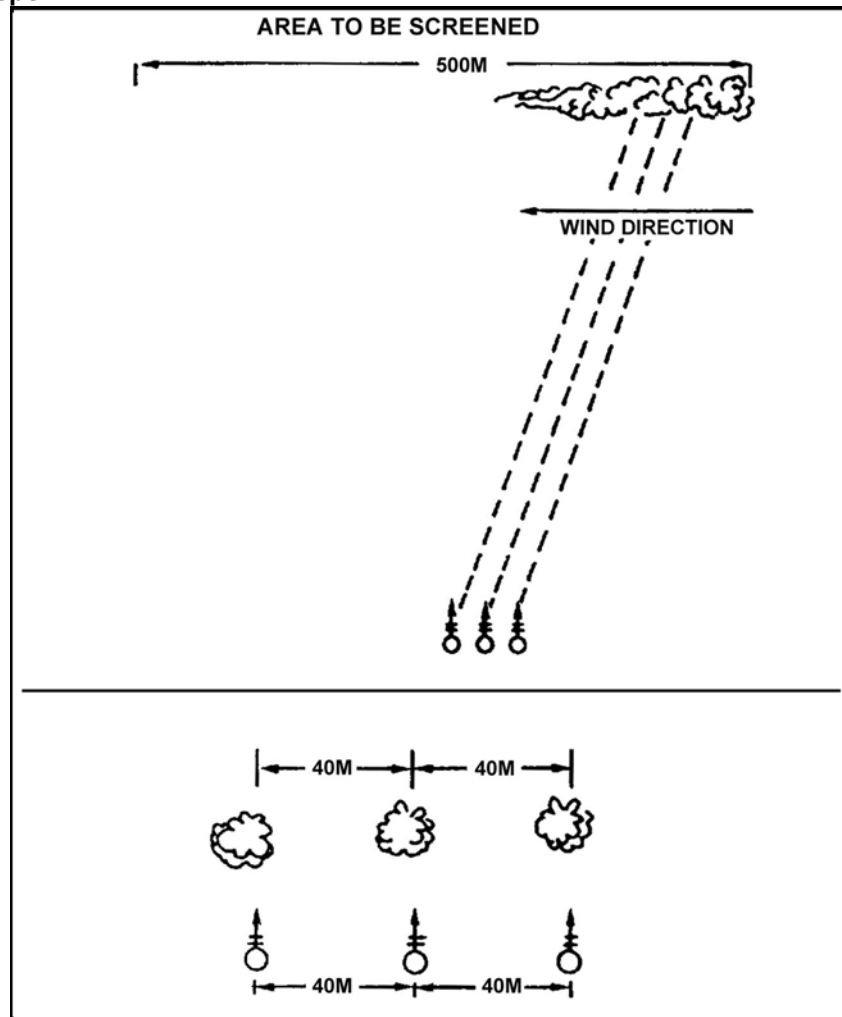


Figure 1. Quick-Smoke Planning Factors

2. The computer computes the required rounds.
 - a. For a mortar platoon (4.2-inch, 60-mm, 81-mm, or 120-mm) to fire a quick-smoke mission, WP must be ordered and stockpiled before the mission.
 - b. When determining the number of rounds required for the mission, the FDC must know the length of time that the screen is to be maintained. This information should be passed to the FDC by either the commander calling for the mission, platoon leader, or fire support officer (FSO).
 - c. To determine the number of rounds to order, the FDC determines the number based on the worst conditions that might be expected at the time the mission is fired.
 - d. The quick-smoke mission is fired in three phases.
 - (1) Adjusting phase: One round of WP is fired as the last adjusting round.
 - (2) Establishment phase: This is double the number of rounds to maintain for one minute, but never less than 12 rounds for 81-mm and never less than 10 rounds for 4.2-inch.
 - (3) Maintaining phase: This is the number of rounds indicated on the smoke card times the number of minutes the screen is to be maintained. For example, using the smoke card (Figure 2), the computer determines that the worst conditions expected are—
 - 30 percent relative humidity.
 - Lapse condition.
 - 2-knot wind speed.

Performance Steps

With those conditions present, the smoke card (Figure 2), indicates that 13 rounds are required for each minute the screen is maintained (10 minutes). The computer computes the rounds required for the mission.

EXAMPLE:

Adjustment phase: 1 round
 Establishment phase: 26 rounds (13 rounds x 2)
 Maintaining phase: 130 rounds (13 rounds x 10 minutes)
 Total rounds: 157

SMOKE AMMUNITION REQUIREMENTS FOR 4.2-INCH MORTARS								
A. SMOKE CURTAIN. NUMBER OF WP ROUNDS PER MINUTE TO MAINTAIN A SMOKE CURTAIN ON A 500-METER FRONT IN FLANK WINDS.								
RELATIVE HUMIDITY (PERCENT)	TEMPERATURE GRADIENT	WIND SPEED, KNOTS						
		2	4	9	13	18	22	26
30	LAPSE	13	13	11	11	13		
	NEUTRAL	9	9	7	7	9	9	11
	INVERSION	6	6	4				
60	LAPSE	9	9	7	9	9		
	NEUTRAL	6	6	4	4	6	7	9
	INVERSION	3	3	3				
90	LAPSE	7	7	6	5	7		
	NEUTRAL	4	4	3	3	4	6	6
	INVERSION	3	3	3				

FOR QUARTERING WINDS, MULTIPLY TABLE VALUES BY 2.
 FOR TAIL WINDS, MULTIPLY TABLE VALUES BY 2.
 FOR HEAD WINDS, MULTIPLY TABLE VALUES BY 2-1/2.
 TABLE QUANTITIES ARE FOR SHELL IMPACT ON LAND; FOR
 WATER IMPACTS, MULTIPLY TABLE VALUES BY 1.4.
 FOR CURTAINS GREATER OR LESS THAN 500 METERS IN
 WIDTH, SCALE THE TABLE VALUES UP OR DOWN
 PROPORTIONALLY.
 TO ESTABLISH A SMOKE CURTAIN, EMPLOY VOLLEY FIRE,
 USING TWICE THE TABLE VALUE (BUT NOT LESS THAN
 10 ROUNDS).

B. OBSCURING SMOKE EFFECT. THE NUMBER OF ROUNDS PER
 MINUTE REQUIRED TO MAINTAIN AN OBSCURING SMOKE
 EFFECT ON A 500-METER FRONT IS OBTAINED BY DOUBLING
 THE VALUES IN A ABOVE.

Figure 2. Example Smoke Card

NOTE: The time used during the establishment phase is not considered as any part of the maintaining phase time of the mission.

3. The computer computes the time interval between rounds to maintain the screen.
 - a. In the example above, the screen is maintained for 10 minutes. The computer divides the 13 rounds that it takes per minute to maintain the screen by the number of mortars that will be firing: 13 divided by 3 = 4.3 rounds per minute.

Performance Steps

- b. Since a mortar cannot fire a part of a round, the computer must decide another way to fire the required rounds. He knows that he can have each mortar fire 4 rounds that equal 12 of the 13 rounds required. For this mission, this leaves 1 round still required. The computer decides that the downwind mortar will fire the remaining 1 round per minute to maintain the screen.
 - c. The firing of any screen must be closely coordinated between the individual who controls the firing and the squad leaders/mortar crews.
 - d. In the example mission, the computer has determined that the mortars will fire three volleys per minute. Dividing 60 seconds by the number of volleys fired (three), the computer determines that a volley must be fired every 20 seconds during the maintaining phase.
 - e. This also means that since the No. 3 mortar is the downwind mortar, it will fire one more round per minute than the other three mortars. The individual controlling the fire must fully explain to the squad leader that, at some point during the firing, he will be given the command, NUMBER THREE, FIRE ONE ROUND. Of the 157 rounds fired during the maintaining phase, 40 rounds each are placed by the No. 1 and No. 2 mortar positions and 59 rounds by the No. 3 mortar position.
4. Control of the FFE.
 - a. When the FO calls for the FFE, the establishment phase is fired as rapidly as safety permits.
 - b. Thirty seconds after the last round of the establishment phase is fired, the first rounds of the maintaining phase is fired. Volley fire is then continued at the time interval determined for the maintaining phase.
5. The data given on the smoke card are for a 500-meter smoke screen in flank wind. When a wider or narrower screen is fired, the computer must scale the data up or down to determine the required rounds per minute.

EXAMPLE: (Scaling up).

Smoke card data: 9 rounds per minute to maintain Target Length: 600 meters

600 divided by 500 = 1.2

1.2 x 9 = 11 rounds per minute to maintain

EXAMPLE: (Scaling down).

Smoke card data: 9 rounds per minute to maintain

Target Length: 200 meters

200 divided by 500 = .4

.4 x 9 = 3.6 = 4 rounds per minute to maintain

EXAMPLE MISSION:

Target Length	300 meters	
Time to maintain:	15 minutes	
Weather conditions:	Relative humidity	60 percent
	Temperature gradient	Lapse
	Wind speed	2 knots
	Wind direction	Quartering wind
Smoke card (rounds per minute)		9 rounds
Rounds per minute due to quartering wind		18 rounds
300 meters		
(width of screen)	500 (smoke card) = .6	
	.6 x 18 = 10.8 = 11 rounds per minute to maintain	
Adjustment phase:	1 round	
Establishment phase:	22 rounds (2 x 11)	
Maintaining phase:	165 rounds (11 x 15)	
Total rounds:	188	

Evaluation Preparation:

SETUP: At the test site, provide all equipment and information given in the task condition statement. This task may be tested during a live fire exercise or as a dry fire exercise. Should the task be tested in the dry fire mode, provide three corrections for the adjustment phase.

Brief Soldier: Tell the Soldier to compute the mission, determine the number of WP rounds required for the mission, and, finally, determine the time interval between volleys.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Computed the number of WP rounds the mission requires based on the worst conditions likely to exist at the time.	_____	_____
2. Computed the adjustment phase of the mission to meet the task standards.	_____	_____
3. Recomputed the number of WP rounds required for the mission on actual weather conditions at the time of firing.	_____	_____
4. Computed the time interval between volleys for the FFE.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
DA FORM 2399

Related
FM 23-91

Compute Data for a Grid Mission Using a Plotting Board
071-078-0012

Conditions: Given a plotting board; sector of fire; map; protractor; Computer's Record, DA Form 2399; firing table; call for fire for a grid mission and three forward observer (FO) corrections; paper; and pencil.

Standards: Determine deflection to within 1 mil with a 10-mil tolerance, and range to within 25 meters with a 25-meter tolerance. For the 4.2-inch mortar, charged to 1/8 charge with a 1/8-charge tolerance.

Performance Steps

NOTE: The information provided in this task applies to the 4.2-inch, 60-mm, 81-mm, and 120-mm mortars.

- 1. Observed chart.
 - a. To plot a grid mission on an observed chart, the computer must have a map of the area and protractor.
 - b. The computer plots the target on the map using the grid given in the call for fire.
 - c. He then determines the direction and distance from the mortar position to the target.
 - d. This information is then transferred to the plotting board. The same procedure is used whether the computer is using the pivot-point method or below-the-pivot-point method.

NOTE: When firing over 2,900 meters, use the below-the-pivot-point method.

- (1) Pivot point. Ensure the direction (azimuth) between the mortar position and the target is indexed at the index point. Then go up the vertical center line to the determined range and make a plot.
 - (2) Below pivot point. Ensure the direction (azimuth) between the mortar position and the target is indexed at the index point. To plot the range, place the edge of the computer's record on the alternate range scale. Place a tick mark on the edge of the computer's record at the determined range. Move the computer's record to the mortar position. Keeping the edge of the computer's record aligned with the vertical lines, make a plot on the plotting board opposite the tick mark on the computer's record.
 - e. By using either of these methods, the computer should have the target plotted, and it can be taken under fire.
- 2. Modified observed and surveyed chart.
 - a. With a grid system, the target is plotted directly on the board using the same procedure as plotting a grid coordinate on a map.

NOTE: Ensure zero is indexed at the index mark before plotting the target.

- - b. By aligning the target with the mortar position, the computer can determine the deflection and range to take the target under fire.

Evaluation Preparation: Setup: At the test site, provide all equipment, materials, and information given in the task condition statement.

Brief Soldier: Tell the Soldier to prepare the plotting board as an observed chart, to compute the mission given, to set the plotting board up as a modified observed chart, and to compute the mission given.

Performance Measures	GO	NO GO
1. Observed chart.	_____	_____
a. Plot the mortar position and target on the map.		
b. Determine the azimuth and range to the target.		
c. Correctly transfer determined data to the plotting board.		
d. Determine all firing data to destroy the target.		

Performance Measures

GO **NO GO**

2. Modified observed chart.

- a. Determine the grid intersection to set up the plotting board.
- b. Correctly set up the grid system on the plotting board.
- c. Plot the mortar position and target.
- d. Correctly place the deflection scale on the plotting board.
- e. Determine all firing data to destroy the target.

NOTE: The same call for fire and FO corrections are used in both procedures.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

DA FORM 2399

Related

FM 23-91

Compute Data for a Mark-Center-of-Sector Mission Using a Plotting Board

071-078-0013

Conditions: As a computer, given a plotting board set up as a modified observed chart; map; DA Form 2399, Computer's Record; protractor; firing table; overlay of the sector of fire; No. 2 pencil; paper; and call for fire for a mark-center-of-sector mission.

Standards: Determined deflections to within 1 mil with a 10-mil tolerance, and ranges to within 25 meters with a 25-meter tolerance. For the 4.2-inch mortar, charged to 1/8 charge with a 1/8-charge tolerance.

Performance Steps

1. The computer uses marking rounds.
 - a. Poor visibility, unreliable maps, deceptive terrain, or rapid movement through unfamiliar terrain sometimes make it difficult, if not impossible, for the observer to accurately locate a target or himself. The observer can request that the fire direction center (FDC) fire on specific points to help him locate and orient himself. Rounds fired for this purpose are known as marking rounds.
 - b. The observer may call for a marking round to be fired on a registration point, previously plotted or fired target, or prominent terrain feature.
 EXAMPLE:
 MARK REGISTRATION POINT ONE
 MARK TARGET AB1001
 MARK HILL 437
 - c. As a last resort, the observer may call for a round to be fired into the center of the target area. This type of mission is known as mark-center-of-sector. It should only be used if the firing section has not registered or fired on any other targets in the area.
2. The computer computes a mark-center-of-sector round. He then determines where to fire the center-of-sector round.
 - a. Plot the left and right limits of the sector of responsibility on a map (if not done yet), and then plot a line through the exact center of this sector (Figure 1).
 - b. Look at the terrain that this center-of-sector line crosses. Place a round somewhere along this line where the FO can see it.
 - (1) (See Figure 1.) The center-of-sector line crosses a ridgeline of which Hill 335 is a part. A wide valley appears before the line crosses high ground again at Comfort Ridge.
 - (2) Only two areas are left to fire the marking round either on or short of Hill 335 or on Comfort Ridge.
 - (3) Of these two areas, the marking round should be fired just short of Hill 335. Should the forward observer (FO) come back with "Cannot observe," the next round can be fired at Comfort Ridge.
3. When firing a marking round, the FDC should fire a round that is easily identifiable, such as a white phosphorus or an illumination round. The illumination round is identifiable even during daylight and is the safest round to fire.
4. After the FO identifies the marking round, he uses the shift-from-a-known-point method to engage the target. He may also use the round to identify a point to orient himself.

Evaluation Preparation:

Setup: At the test site, provide all equipment and material given in the task condition statement.

Brief Soldier: Tell the Soldier to plot the sector of fire on the map, plot the center of sector, determine where to fire the marking round, and then transfer this information to the plotting board and determine initial data.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Plotted the sector of fire on a map.	_____	_____
2. Plotted the center of sector.	_____	_____
3. Determined the best place to fire the marking round.	_____	_____
4. Transferred information to the plotting board.	_____	_____
5. Determined initial data to fire the marking round.	_____	_____

NOTE: The tester determines the best point to place the marking round before the test. Extra space is given in the placement of the round as long as the point selected by the Soldier is near the tester's selected point.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
DA FORM 2399

Related
FM 23-91

Compute Data for a Shift Mission Using a Plotting Board
071-078-0016

Conditions: Given a plotting board prepared for operation, base mortar location, a shift mission call-for-fire and corrections, graphical firing chart or firing tables, Computer's Record, DA Form 2399 and pencil, and a military map of the firing area.

Standards: Firing data was produced which resulted in fire being placed on the target or within bursting radius of the round fired.

Performance Steps

1. Record the call-for-fire (CFF).

NOTE: The fire direction center (FDC) order is normally prepared by the senior individual involved in the FDC activity. If working alone, the computer assumes the responsibility for the order.

NOTE: All shift CFFs must contain the forward observer's (FO's) direction, and the angle T must be determined by the computer.

2. Locate the known point from which the shift is to be made.
3. Index the FO's direction.
4. Plot the shift.
5. Apply no-fire/safety restrictions.
6. Determine deflection.
7. Determine range.
8. Determine charge.
9. Apply firing corrections.
10. Formulate/issue a fire command.
11. Record the correction.
12. Index the FO's direction.
13. Plot the correction.
14. Apply no-fire/safety restrictions.
15. Determine deflection.
16. Determine range.
17. Determine charge.
18. Apply firing corrections.
19. Formulate/issue a fire command.

NOTE: Steps 11 through 19 are repeated, as necessary, until a fire-for-effect (FFE) is requested, or the mission is terminated for other reasons. All necessary data is recorded on the computer's record, and the target recorded, assigned a number, or disposed of in accordance with instructions or the situation.

20. Formulate/issue the fire command.
21. Record the FO's observations.

Performance Steps

22. Update the plotting board.
23. Update the computer's record and firing data sheet.

Evaluation Preparation:

SETUP: At the test site, provide the Soldier with all the equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to compute data for a shift mission using a plotting board.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Recorded the call for fire.	_____	_____
2. Located the known point from which the shift is to be made.	_____	_____
3. Indexed the FO's direction.	_____	_____
4. Plotted the shift.	_____	_____
5. Applied no-fire/safety restrictions.	_____	_____
6. Determined deflection.	_____	_____
7. Determined range.	_____	_____
8. Determined charge.	_____	_____
9. Applied firing corrections.	_____	_____
10. Formulated/issued a fire command.	_____	_____
11. Recorded the correction.	_____	_____
12. Indexed the FO's direction.	_____	_____
13. Plotted the correction.	_____	_____
14. Applied no-fire/safety restrictions	_____	_____
15. Determined deflection.	_____	_____
16. Determined range.	_____	_____
17. Determined charge.	_____	_____
18. Applied firing corrections.	_____	_____
19. Formulated/issued fire command.	_____	_____
20. Recorded the FO's observations.	_____	_____
21. Updated the plotting board.	_____	_____
22. Updated the computer's record and firing data sheet.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

STP 31-18B34-SM-TG

References

Required

DA FORM 2399

Related

FM 23-91

Compute Data for a Split-Section Mission Using a Plotting Board
071-078-0017

Conditions: Given a plotting board set-up as an observed, modified observed, or surveyed chart, graphical firing scale and/or firing tables, pencil, paper, computer's record, firing data sheet, a forward observer (FO) who can observe the firing area, a split firing section, one or more targets, one or more surveyed positions, a call-for-fire, and communications with all involved elements.

Standards: Firing data were produced which resulted in fire being placed on the target by both elements of the split-section.

Performance Steps

1. Receive and record the call-for-fire.
2. Setup the plotting board for both firing sections.
3. Adjust to the target with the red section.
4. Mark/label the target for the red section.
5. Adjust to the target with the blue section.
6. Mark/label the target for the blue section.
7. Consolidate data onto one target.
8. Continue mission.
9. Add setup data for the blue section.
10. Fire and adjust the blue section to any target previously fired by the red section.
11. Continue mission.
12. Add setup data for the blue section.
13. Register the blue section on the reference point (RP).
14. Apply registration corrections to the blue section's firing data.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to compute data for a split-section mission using a plotting board.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Received and recorded the call for fire.	_____	_____
2. Setup the plotting board for both firing sections.	_____	_____
3. Adjusted to the target with the red section.	_____	_____
4. Marked/labeled the target for the red section.	_____	_____
5. Adjusted to the target with the blue section.	_____	_____
6. Marked/labeled the target for the blue section.	_____	_____
7. Consolidated data onto one target.	_____	_____

Performance Measures	<u>GO</u>	<u>NO GO</u>
8. Added set up data for the blue section.	_____	_____
9. Fired and adjusted the blue section to any target previously fired by the red section.	_____	_____
10. Added set up data for the blue section.	_____	_____
11. Registered the blue section on the RP.	_____	_____
12. Applied registration corrections to the blue sections firing data.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-91

Compute Data for an Immediate-Suppression or Smoke Mission Using a Plotting Board

071-078-0018

Conditions: Given a plotting board prepared for operation, a pencil, and a call-for-fire requesting immediate-suppression or smoke.

Standards: Firing data were determined, which when fired resulted in smoke or high explosive (HE) being fired for effect without adjustment (type of round being dependent on the type requested).

Performance Steps

NOTE: Immediate-suppression and/or smoke missions are computed in the same manner as a standard grid, shift, or polar mission. The principal difference is that a standard number of rounds (standing operating procedure [SOP] dependent) is immediately fired for effect on the target plot, using a standard sheaf, without adjustments.

1. Receive/record the call for fire.
2. Plot the firing data.
3. Formulate/issue the fire command.
4. Record the mission/update the plotting board.

Evaluation Preparation: SETUP: At the test site, provide the Soldier with all the equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to compute data for an immediate suppression or smoke mission using a plotting board.

Performance Measures

1. Received/recorded the call for fire.
2. Plotted the firing data.
3. Formulated/issued the fire command.
4. Recorded the mission/updated plotting board.

GO NO GO

_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-91

Compute Registration Corrections Using a Plotting Board**071-078-0019**

Conditions: Given a plotting board set-up as a modified observed or surveyed chart, a requirement or request to register the section, a firing section, a registration point (RP), with or without a graphical firing scale, pencil, and firing records.

Standards: The section was registered on the RP. Differences between chart data and adjusted data were determined and recorded/ applied to fire control equipment.

Performance Steps

1. Fire/adjust to the RP.
2. Adjust the sheaf on the RP.
3. Refer sights and realign aiming stakes on adjusting mortar data.
4. Determine and record the charge correction (Firing Tables).
5. Construct an adjusted charge gauge line.
6. Determine and record deflection correction.
7. Determine range difference.
8. Determine range correction factor.
9. Determine deflection correction.
10. Update the plotting board.
11. Update the firing data sheet.

Evaluation Preparation: SETUP: At the test site, provide the Soldier with all the equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to compute registration corrections using a plotting board.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Fired/adjusted to the RP.	_____	_____
2. Adjusted the sheaf on the RP.	_____	_____
3. Referred sights and realigned aiming stakes on adjusting mortar data.	_____	_____
4. Determined and recorded the charge correction.	_____	_____
5. Constructed and adjusted charge gauge line.	_____	_____
6. Determined and recorded deflection correction.	_____	_____
7. Determined range difference.	_____	_____
8. Determined range correction factor.	_____	_____
9. Determined deflection correction.	_____	_____
10. Updated the plotting board.	_____	_____
11. Updated the firing data sheet.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-91

Compute Terrain Mortar Positions Using a M16 Plotting Board**071-078-0020**

Conditions: As a computer, in a mortar platoon, given an M16 plotting board, 1:50,000 map, coordinate scale, mil protractor, overlay of company's area of responsibility to include mortar positions, reference points, pencil, an azimuth lay of 6400 mils, the deflection and distances from the aiming circle to each mortar are:

MORTAR	DEFLECTION (mils)	DISTANCE(meters)
No. 1	800	200
No. 2	1900	135
No. 3 (Base Piece)	2400	95
No. 4	2950	120
No. 5	3400	140
No. 6	3950	115

Standards: Computed positions so the burst line, using the mortar systems' high explosive (HE) ammunition, is within 30 meters for the M224, 35 meters for the M29A1, 40 meters for the M252 and M30, and 60 meters for the M120.

Performance Steps

1. Index the lay deflection from the aiming circle to No. 1. (800 mils over the center line arrow).
2. Count off 200 meters parallel to the center line down from the aiming circle. Place a circled dot there and label it No. 1.
3. Index the lay deflection from the aiming circle to No. 2 (1900 mils over the center line area).
4. Count off 135 meters parallel to the center line down from the aiming circle. Place a circled dot there and label it No. 2.
5. Index the lay deflection from the aiming circle to the No. 4 (2950 mils over the center line).
6. Count off 120 meters parallel to the center line down from the aiming circle. Place a circled dot there and label it No. 4.
7. Follow the same procedures to plot No. 5 and No. 6.

NOTE: Once all mortar locations are plotted, erase the temporary lay deflection scale and superimpose a referred deflection scale as performed when setting up the M16/19 plotting board.

8. Index the azimuth of lay (6400 mils over the center line arrow) and read the displacement of each mortar right/left and forward/behind the base piece.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to compute terrain mortar positions using the M16 plotting board.

Performance Measures

1. Indexed the lay deflection for each mortar.
2. Counted off the meters parallel to the center line for each mortar.
3. Indexed the azimuth of lay.

GO **NO GO**

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measures are failed. If the Soldier scores a NO-GO show what was done wrong and how to do it correctly.

References
Required

Related
FM 23-91

Subject Area 5: OPERATIONS

Prepare Mortar Fire Plans**071-074-0016**

Conditions: As a section sergeant, given a standard 1:50,000-scale military map of the area and guidance from the unit commander to include location of forward units, scheme of maneuver, known enemy location, avenues of approach, assembly areas, fires desired, location of mortar and artillery final protective fires (FPF), and location of the command post.

Standards: Make recommendations to aid the commander in preparing a fire support plan by completing a target list to include target description and location.

Performance Steps

NOTE: The fire support officer (FSO) assists in preparing fire support plans by making target recommendations to aid the unit commander in enforcing his planned operations. In the absence of the fire support team (FIST), the following are some considerations to aid in preparing a fire support plan.

1. The section sergeant considers planned targets to include known and suspected enemy locations and prominent or key terrain features.
 - a. Known enemy locations. Plan fires on all known enemy locations that could hinder the supported unit's mission. Targets are planned beyond the range of supporting weapons.
 - b. Suspected enemy locations. These include such areas as probable observation posts (OPs), troop positions, assembly areas, avenues of approach, and routes of withdrawal. These targets are planned so they are readily available if the target is confirmed.
 - c. Prominent or key terrain features. These include hilltops, road junctions, buildings, objectives, and other locations easily identified on a map and on the ground. These targets are planned to deny their use to the enemy, to aid friendly forces in their capture, and to provide reference points from which to shift fires.
2. In the offense, the section sergeant plans targets from the line of departure (LD) to the objective, on the objective, and to the flanks of and beyond the objective. In the defense, he plans targets in front of positions, in front of friendly barriers and obstacles, on top of positions, on the flanks to protect the force, and behind friendly positions. (See FM 7-90, Chapters 4 and 5.)
3. The FIST consolidates its targets on a target list (Table 1), giving a description and location for each target. This list is submitted to the company commander to be incorporated into the unit fire support plan. The target list is then sent to the FSO at battalion, to platoon forward observers (FOs), to platoon leaders, and to the fire direction center (FDC).

Table 1. Example Target List

EXAMPLE: TARGET LIST				
LINE NUMBER	TARGET NUMBER	DESCRIPTION	LOCATION	REMARKS
1	C	FPF		
2	AA0050	DEFENSIVE TARGET	148834	
3	AA0051	DEFENSIVE TARGET	159833	
4	AA0052	DEFENSIVE TARGET	152833	
5	AA0053	DEFENSIVE TARGET	153881	
6	AA0054	SUSPECTED OP	148825	
7	AA0160	HILLTOP	15039196	
8	AA0161	SUSPECTED OP	150817	
9	AA0162	HILL	1518080	
10	AA0163	ENEMY POSITION	152802	100-Meter Zone
11	AA0164	ROAD JUNCTION	149838	
12	AA0165	CROSSROADS	15028303	
13	AC7010	ROAD JUNCTION	15528303	
14	AC7011	ROAD JUNCTION	14288187	

Performance Steps

4. The FSO must ensure that the platoon FOs, platoon leaders, and FDC computers are familiar with the fire plan. Target overlays (Figure 1) should be provided to them and to the company commander if time permits.

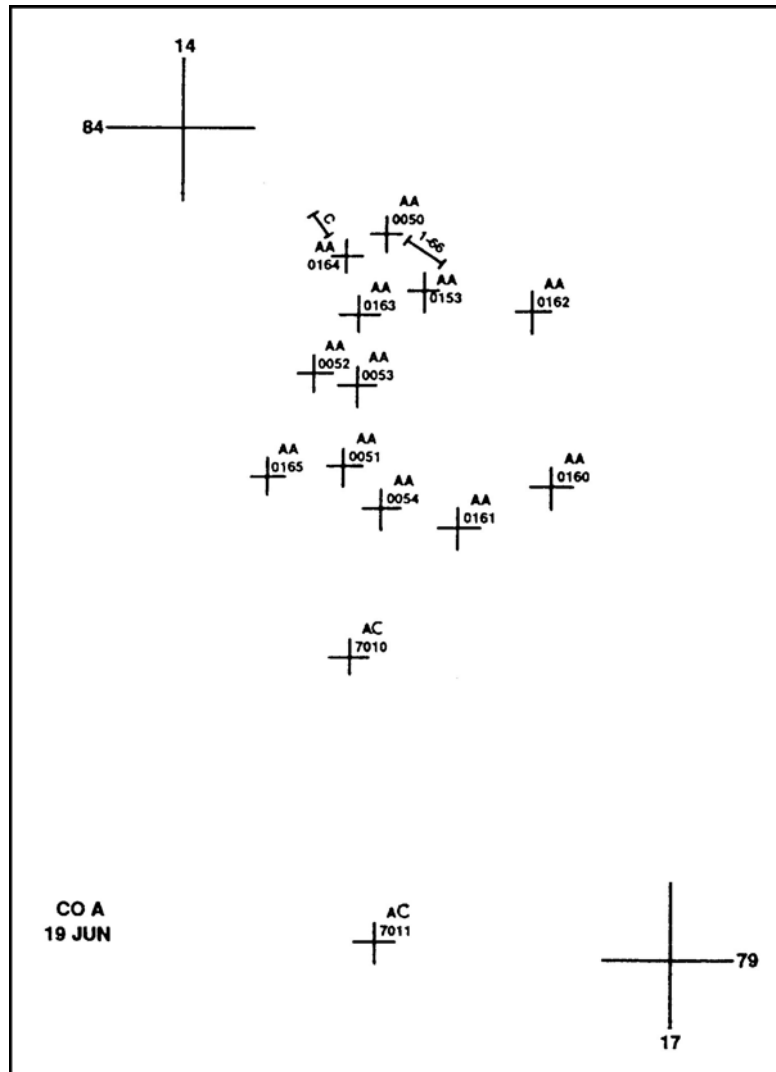


Figure 1. Target Overlay

5. The fire support coordinator (FSCOORD) at each level (FSOs at company level and battalion level) plans and coordinates as follows:
 - a. Plans.
 - (1) Anticipates mission requirements so he can advise the commander how to best use fire support.
 - (2) Assesses fire support means available and, on the basis of that assessment, recommends priorities of fire and allocations of fire support.
 - (3) Ensures that all agencies that can provide target information are used effectively.
 - (4) Studies the enemy situation and force mission and recommends what targets to attack and how.
 - (5) Makes necessary plans to offset the unexpected and to expedite changes.
 - (6) Plans use of all fire support agencies as they contribute to the overall fire support.

Performance Steps

- (7) Determines coordinating measures that best facilitate maneuver actions and provide safeguards to protect friendly elements.
- (8) Develops and coordinates an efficient, fully integrated fire support plan.
- b. Coordinates.
 - (1) Anticipates changes dictated by the developing battle and recommends revision of the fire support plan.
 - (2) Directs the fire support attack of targets in the priority established by the commander.
 - (3) Tasks the most effective fire support means to attack targets.
 - (4) Coordinates all fire support in the commander's zone or sector.
 - (5) Ensures the safeguarding of friendly elements.
 - (6) Ensures continued flow of targeting information.

Evaluation Preparation: Setup: At the test site, provide all the equipment and material given in the task conditions statement.

Brief Soldier: Tell the Soldier that, using the equipment and material provided, he must assist the unit commander in preparing the indirect fire support plan.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Assist in making recommendations for the target list.	_____	_____
2. Plan fires on all known enemy locations.	_____	_____
3. Plan fires on all suspected enemy locations.	_____	_____
4. Plan fires on prominent or key terrain.	_____	_____
5. Submit target list through the platoon leader to the company commander.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required

Related

FM 23-91
FM 6-20
FM 7-90

Issue an Oral Operation Order

071-326-5505

Conditions: Given a platoon operation order (OPORD), a map and map overlay of the operational area, pencil and paper, and a requirement to develop and issue an order to subordinates that supports the higher unit's intent and concept and allows for accomplishment of your mission.

Standards: Within the time allotted, develop a clear and concise oral order and issue it to your unit members. The order must be issued so that all individuals understand their assigned tasks and any coordinating instructions. Issue the OPORD in the standard OPORD format.

Performance Steps

1. Apply troop-leading procedures to develop an order that supports the commander's plan and allows accomplishment of the mission. The troop-leading procedures are:
 - a. Step 1. Receive the mission.
 - b. Step 2. Issue a warning order.
 - c. Step 3. Make a tentative plan.
 - d. Step 4. Start necessary movement.
 - e. Step 5. Reconnoiter.
 - f. Step 6. Complete the plan.
 - g. Step 7. Issue the order.
 - h. Step 8. Supervise.

NOTE: You must apply troop-leading procedures each time you receive a mission. Troop-leading procedures are a series of eight interrelated, overlapping processes that are often accomplished concurrently and do not follow a rigid sequence. Leaders must use the procedures as outlined, if only in abbreviated form, to ensure that nothing is left out of planning and preparation and that Soldiers understand the mission and prepare adequately. The detail of the order varies with the time available to prepare it. Standing operating procedures complement the order and allow the leader to refer to them for reoccurring tasks. The sequence is used to help organize the order; however, leaders extract mission-essential information from higher unit orders rather than copy the order.

2. Issue the situation paragraph.
 - a. Enemy forces. Provide available information on disposition, composition, strength, capabilities, and most probable course of action.
 - b. Friendly forces. Give available information concerning the missions of next higher and adjacent units.
 - c. Attachments and detachments. Give information concerning any units that have been attached or detached.
3. Issue the mission paragraph. Issue a clear, concise statement of the task to be accomplished and the purpose for doing it.
 - a. Situation paragraph.
 - (1) Enemy forces: Provide available information on disposition, composition, strength, capabilities, and most probable course of action.
 - (2) Friendly forces: Give available information concerning the missions of next higher and adjacent units.
 - (3) Attachments and detachments: Give information concerning any units that have been attached or detached.
 - b. Mission paragraph. The mission paragraph contains a clear, concise statement of the task to be accomplished and the purpose for doing it.
 - c. Execution paragraph. Provide information about the operation, if available.
 - d. Service support paragraph. Provide all known instructions and arrangements supporting the operation.
 - e. Command and signal paragraph. Designate the succession of command if it differs from the unit standing operating procedure (SOP).

Performance Steps

NOTE: Warning orders involving movement should state the time of movement.

4. Issue the execution paragraph.
 - a. Given the concept of the operation, explain in general terms how your unit, as a whole, will accomplish the mission.
 - b. Address each unit member by name and assign specific tasks they are to accomplish.
 - c. Describe the plan for the fire support to synchronize and complement the scheme of maneuver. Address priority of fires, priority of targets, and any restrictive control measures on the use of fires.
 - d. State the concept of employment of any combat support attachments—who will have priority of their use, how they are to be used, and how long they will be controlled.
5. Issue the service support paragraph.
 - a. Provide instructions and arrangements supporting the operation that are of primary interest to your unit (location of and routes to casualty/prisoner of war [POW] collection points), including changes to established SOPs.
 - b. Provide information on classes of supply that are of interest to your unit.
 - c. Provide any administrative instructions that affect your unit, such as maintenance or destruction of supplies.
6. Issue the command and signal paragraph.
 - a. Give the location of the higher unit command post. Designate the succession of command if it differs from unit SOP.
 - b. Provide communications instructions to include visual signals, radio frequencies, and call signs.

Evaluation Preparation: Setup: Provide the Soldier with the material listed in the task conditions statement (unit OPORD should be written).

Brief Soldier: Tell the Soldier that, using the written platoon orders, he will develop a squad operation order. Tell the Soldier that, upon completion of the order, he will give the order orally.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Develop a clear and concise OPORD using the standard OPORD format.	_____	_____
a. Situation.		
b. Mission.		
c. Execution.		
d. Service Support.		
e. Command and Signal.		
2. Issue the order in a clear and concise manner, and clarify questions.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any steps are failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

FM 101-5
FM 7-7
FM 7-8

Prepare an Oral Operation Order

071-326-5626

Conditions: Having received the unit commander's oral operation order (OPORD) and map overlay, given a platoon, pencil, paper, and a map of the operational area.

Standards: 1. Within the time allotted, develop a clear and concise order and issue it to your subordinate leaders. The order must be issued so that all subordinate leaders understand their missions and any coordinating instructions.

2. The order should follow the standard OPORD format.

Performance Steps

1. Receiving an OPORD. The most important part of receiving an order is a clear understanding of what your unit has to accomplish in relation to the ground and to the other platoons. You must know exactly what you are supposed to do, what the other units are doing, and where and when these actions are to be done, to succeed. Ask questions to clarify commander's intent.
2. Think through the order. As soon as you receive the order and understand the leader's plan, review your notes. As you think about the order, answer these questions:
 - What mission(s) did I receive?
 - How much do I know about the enemy?
 - How does the terrain and weather influence the operation?
 - What supplies or equipment do I need?
 - Do I need to assign special tasks to anyone?
 - a. Mission.
 - (1) In analyzing your mission, identify exactly what your unit is to accomplish. Be sure you know how much time you have to prepare. Make sure you are aware of any restrictions or special tasks that apply to your platoon.
 - (2) A thorough understanding of the mission will allow you to establish a time schedule for your preparation. You will be told what time the operation is to begin and what time your unit must be ready to go. This allows you to allocate time to prepare for the mission. Identify the things that must be done to get ready and, working backwards from the "ready" time, allow your Soldiers time to accomplish each task. This technique is called the reverse planning sequence. An example of this for a platoon leader might be as follows:
 - 1420: Company commander said to be ready.
 - 1415: Inspect assembly area.
 - 1400: Inspect platoon.
 - 1315: Issue order to platoon.
 - 1300: Finalize platoon order.
 - 1200: Reconnoiter with company commander and receive order.
 - 1100: Issue warning order to platoon.
 - 1040: Receive company warning order.
 - b. Enemy.
 - (1) Develop the best picture of exactly where the enemy is located, what his strength is, and what kind of weapons and equipment he has. Tell your men as much as you know about how to destroy or suppress the kind of enemy you are likely to meet.
 - (2) Sometimes the enemy in a certain area will repeat the same pattern. For example, if you know that the enemy habitually ambushes in the vicinity of trail junctions, make sure all of your men know about it.
 - c. Terrain and weather.
 - (1) Most decisions pertaining to route, objective, sectors of fire, positioning of key weapons, and movement techniques are made by the unit leader. However, both the company commander and the subordinate leaders must closely study the ground if they are to properly employ their men and equipment, and gain an advantage over the enemy.

Performance Steps

- (2) Proper use of terrain will:
 - (a) Provide cover and concealment before, during, and after the battle.
 - (b) Increase the effectiveness of your fire.
 - (c) Decrease the effectiveness of the enemy's weapons.
 - (3) You must also understand how weather can influence your men. Cold, heat, rain, or snow can create problems if you don't properly prepare your platoon.
 - d. Supplies, equipment, and special tasks. If you have been given a task that requires a special skill, such as setting demolitions to blow a building, make sure you know how to do it. You must have the right weapons, equipment, and supplies. If you need specialized personnel or equipment, tell your leader or commander.
3. Issuing an OPORD. After you have received an OPORD, think it through and prepare your own order. You must issue that order. Leaders should issue their orders from a position that allows the subordinate leaders to see the ground on which they are going to operate.
 4. Structure of the OPORD.
 - a. The OPORD contains five paragraphs and always follows the same sequence. An outline and brief explanation of each paragraph follows:
 - (1) Paragraph 1.
 - (a) Situation: This paragraph contains all available information concerning the enemy and friendly situations.
 - (b) Enemy forces: Any available information such as strengths, weaknesses, probable courses of action, weather, and terrain.
 - (c) Friendly forces: All available information concerning the missions of next higher and adjacent forces.
 - (d) Attachments and detachments: Information concerning any units that have been attached to or detached from the platoon.
 - (2) Paragraph 2. Mission: A clear, concise statement of the task that must be accomplished by the platoon.
 - (3) Paragraph 3. Execution: Contains the mission for each section and attached element (if any). This paragraph also contains any special instructions that apply to a specific section or to the platoon as a whole, and the plan for fire support.
 - (4) Paragraph 4. Service support: Administrative details to include ammunition supply, ration resupply, and the evacuation of casualties.
 - (5) Paragraph 5. Command and signal: Communications instructions to include visual signals, radio frequencies and call signs, and the platoon leader and company commander's location during the operation.
 - b. In preparing your platoon order, look for those items in the company order that you must alter to fit the platoon's mission. For example, if paragraphs 2 and 3 of the company order are given as:
 - (1) Paragraph 2. Mission: Company A attacks 240600 May to seize Hill 492 and Hill 475 and continues the attack, on order, to seize Hill 510.
 - (2) Paragraph 3. Execution: 2d platoon makes the main attack on the right to seize Objective 1 and, on order, Objective 3.
 - c. Subordinate leaders should also try to issue their orders from vantage points that overlook the terrain. However, many times this will not be possible, and they will have to sketch the terrain on the ground. Terrain models are easy to construct and allow the leader to associate his order and terrain features so that each man will have an idea of what to expect.
 - d. The OPORD. An OPORD is the presentation of the information and instructions needed to accomplish a specific mission. The amount of detailed information included in your OPORD depends on the information you received and the time you have to prepare.
 - e. As 2d platoon leader, you might alter your paragraphs 2 and 3 as follows:
 - (1) Mission: 2d platoon attacks 240600 May to seize Hill 492 and, on order, Hill 475.

Performance Steps

- (2) Execution: From the line of departure (LD) to the final coordinating line (FCL), we use bounding overwatch. Heavy Team, you will overwatch initially, and light team will bound. Heavy Team, at the FCL you link up with 3d platoon on the right. Light Team, you link up with the 1st platoon on the left. Movement from the FCL is on my command. Heavy Team, after consolidation, you...
5. Paragraph 1 should contain the mission of the company, which was stated in paragraph 2 of the company OPORD. Paragraphs 4 and 5 of the company order are narrowed down to apply only to your platoon. For example, if paragraph 4 of the company order gives you the location of the battalion field trains, your platoon order will probably not contain that information because it does not directly affect your squads. Your responsibility as a platoon sergeant or acting platoon leader is to give your men the information that pertains to them. The five-paragraph order format should be used as a checklist to avoid omitting important information. It is not all inclusive, however, and may be modified as necessary.

Evaluation Preparation: Setup: Provide at the test site a complete written company OPORD; also provide pencil and paper.

Brief Soldier: Tell the Soldier that by using the written company order, he will develop a platoon OPORD. Tell the Soldier that upon completion of the order he will orally give it to you.

Performance Measures**GO** **NO GO**

1. Develops a clear and concise oral platoon OPORD that includes the following: — —

- a. The mission of the company.
- b. The mission of the platoon.
- c. The concept of how the battle would be fought, to include:
 - (1) Location of the objective.
 - (2) Time of the attack.
 - (3) Location of the LD.
 - (4) Location of the assault position.
 - (5) Route and order of march.
 - (6) Consolidation instructions.
- d. Critical signal instructions.
- e. The location of platoon sergeant or acting platoon leader during the attack.

NOTE: In order to receive a "pass" for performance measure 1c, all subelements must be included in the OPORD.

2. Issues the order in a clear and concise manner and clarifies questions. — —

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any steps are failed. If the Soldier scores NO-GO, show what was done wrong and how to do it correctly.

References**Required**

FM 101-5-1
FM 7-7
FM 7-8

Related

Assist in Planning a Field Training Exercise
331-201-2003

Conditions: As a Special Forces weapons sergeant, given commander's guidance, previous field training exercise (FTX) results, unit Army Training and Evaluation Program (ARTEP), input from the other staff sections, and necessary office supplies.

Standards: 1. Assist in the development of the following:

- a. General situation. (May be taken from the ARTEP that applies to your unit.)
- b. Initial situation and requirements.
- c. Subsequent situation and requirements.
- d. Control plan.

NOTE: If the ARTEP is used, modify the ARTEP situations to apply to your geographic area.

2. Assist the staff in coordinating routine information, decisions, and orders between staff sections.
3. Brief the controllers and leaders on what is expected of them.
4. Critique the leaders and control personnel after completion of the FTX.

Performance Steps

1. FTX. A well-conducted FTX offers two well-defined products. First, it demonstrates the unit's ability to perform under simulated combat conditions, thereby identifying training deficiencies for future training. Second, it offers a test of those skills and techniques taught in previous tactical exercises.
 - a. Initial situation. The initial situation in an FTX is presented in the form of an operation order or a fragmentary order. Since there are two opposing sides, two operation orders must be prepared. The initial situation must place the Red and Blue forces so one or the other moves tactically to make contact. Because the FTX is a free exercise where units can maneuver against each other, the first requirement should be a statement outlining the expected orders and actions of the participating units as a result of the conditions presented in the initial situation.
 - b. Subsequent situations. The subsequent situations for both sides are taken from the training objectives and cause the exercise to develop logically. Their content is dependent on the type of operation involved in the exercise. Again, the requirements for the subsequent situations take the form of expected orders and actions to be taken by the participating units. These requirements serve as a guide for the control personnel.
 - c. Time schedule. The time schedule is an estimate of the amount of time required to complete the FTX. This estimate should include time for administrative movement and a critique.
 - d. Control plan. The control plan gives instructions to the controllers. It identifies the number of controllers, their uniform and equipment, and an outline of their duties. Controllers should be familiar with the scenario because they must guide the exercise in accordance with the requirements.
 - e. Terrain. The amount of terrain preparation required depends upon the training objectives of the FTX. For example, in a free-play exercise, no terrain preparation is necessary; opposing units will prepare the terrain according to their mission.
2. How to conduct a field exercise. Successfully conducting an FTX is dependent upon a complete scenario and the controllers. The general situation is issued to each side, and the exercise becomes tactical. The initial situation is then issued, and the exercise begins.
 - a. Controllers are required to observe the unit continuously after the initial situation is issued in order to exercise control and to evaluate.
 - b. During the exercise, the controllers must remain as tactical as the participants. Controllers place themselves in positions to observe leaders and other members of the unit. The controllers must exercise judgment in case a decision by a leader threatens to disrupt the exercise.
 - c. At the conclusion of the FTX, all participants will receive a debriefing or be brought together to review their actions during the exercise.

Performance Steps

3. FTX requirements. The information discussed in the preceding paragraphs contains the steps to take in planning an FTX. However, detailed planning and staff coordination are necessary to ensure that an FTX at any level accomplished the training objectives. The highest degree of coordination is required in planning and conducting an FTX. Planning and conducting an FTX should include:
- Overview briefing to the staff.
 - Defining specific training objectives.
 - Determining forces available.
 - Determining opposing forces.
 - Allocating maneuver area.
 - Preparing scenario and general and special situations.
 - Issuing exercise directives.
 - Publishing exercise intelligence situation, exercise plan, and signal intelligence (SIGINT) and signal security (SIGSEC) plans.
 - Preparing necessary operation plans (OPLANs) and operation orders (OPORDs).
 - Selecting, organizing, and briefing controllers.
 - Issuing exercise evaluation plan.
 - Final reports, reviews, or critiques.

Performance Measures

GO **NO GO**

NOTE: Sequence is not scored.

- | | | |
|---|---|---|
| 1. Complete initial situation in the form of an operation order or fragmentary order. | — | — |
| 2. Complete the initial situation by placing the Red and Blue forces to move tactically to make contact. | — | — |
| 3. Develop the subsequent situation for both sides so that the training objectives cause the exercise to develop logically. | — | — |
| 4. Establish an accurate time schedule to ensure maximum training benefits from the exercise. | — | — |
| 5. Prepare a control plan that identifies— | — | — |
| a. The number of controllers. | | |
| b. The uniform and equipment. | | |
| c. The controller's duties. | | |
| 6. Determine the amount of terrain preparation required based upon the training objectives of the field exercise. | — | — |

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
FM 25-4

Related
STP 31-18B34-SM-TG

Plan for the Use of an Indirect-Fire Range
331-201-2016

Conditions: As a Special Forces weapons sergeant, given the requirement to establish an indirect fire range.

Standards: Plan and construct an indirect fire range in accordance with (IAW) AR 210-20, *Master Planning for Army Installations*, and AR 385-63, *Range Safety*.

Performance Steps

1. Site selection (on level land).
 - a. In selecting a site, the sun should not set or rise into the Soldier's eyes to avoid target blindness.
 - b. Known distance ranges should have a horizontal line of fire.
 - c. Firing points on known distance ranges may be below the target, provided the grade between the points and targets does not exceed 2 percent.
2. Layout of the surface danger zone.
 - a. Review AR 385-63 to determine the surface danger area.
 - b. Plan perimeter descriptions and layout maps using AR 210-20.
3. Target planning area.
 - a. Target visibility.
 - (1) The planner must positively ensure that targets are within safe limits and are visible from firing points, positions, or lanes.
 - (2) The planner must consider the mobility or range support equipment and the target's ability to depict realism. Fleeting targets are typical in the combat environment and are usually the only targets that appear in the open.
 - (3) Targets should be placed at realistic distances. Vegetation, stumps, shell holes, and other items should help the Soldier determine range.
 - b. Characteristics for 60-mm, and 81-mm mortars.
 - (1) Number of firing positions - 4 per firing point.
 - (2) Firing line width - 100 meters.
 - (3) Target area width - 2,000 meters.
 - (4) Minimum range depth - 6,000 meters.
 - (5) Firing point configuration - surveyed markers.
 - (6) Target configuration - personnel, vehicle, and material targets supplemented by surveyed natural terrain features.
 - (7) Associated facilities - none.
 - c. Additional information.
 - (1) Forward observation areas are located in front of the firing areas and slightly to the flank of the primary mortar and target lanes.
 - (2) A common impact area is used for all types of mortars. It is at least 2 kilometers wide and 6 kilometers deep. Firing at maximum and minimum ranges is obtained by using different firing points.
 - (3) Target protection is action taken to protect the new modern stationary target elevating mechanisms. The most common protective measures are:
 - (a) Target pads.
 - (b) Earth-retaining walls.
 - (c) Target coffins.

Performance Steps

4. Surface danger zones. AR 385-63 is the source for the Army policy for variations in surface danger zones. If the sites cannot accommodate the desired surface danger zones, alternatives may include—
 - a. Restricting gun tube elevation.
 - b. Using subcaliber ammunition.
 - c. Firing at negative elevation or into a hill mass.
 - d. Restricting direction and zone of fire.
 - e. Using special training devices.

NOTE: Foreign Ranges—The requisition, use, and disposal of foreign ranges can present unique problems. Consider each range separately in light of existing foreign military rights, agreements, and subsidiary arrangements. Range managers should coordinate with State Department representatives, except when other diplomatic channels exist, for range operations and actions. If a real estate representative of the U.S. Corps of Engineers is serving in the foreign country, he can help negotiate and draft legal documents.

5. Safety acceptance inspection.

NOTE: Before units can begin normal operation in the target area, safety technicians must perform a safety acceptance inspection. This inspection includes a specifications check and a trial operation.

- a. Safety technicians ensure proper materials are used throughout the range.
- b. Safety technicians ensure proper measurements are used throughout the range.
- c. Target area measurements must meet rigid specification.
 - (1) Distance from the firing points to the target.
 - (2) Spacing of targets and firing points.
- d. Safety technicians conduct a trial operation of the range to ensure safety.
 - (1) Illumination ammunition should be fired to check fire hazard.
 - (2) After the illumination fire is completed, safety technicians check the normal live-fire operations for undetected deficiencies.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Plan correct dimension for specific indirect-fire weapon.	—	—
2. Stake out safety dimensions for surface danger zone.	—	—
3. Stake out safety dimensions for target area.	—	—
4. Stake out safety dimension for impact area.	—	—
5. Stake out probable error danger area.	—	—
6. Stake out secondary danger area.	—	—
7. Stake out safety area for troops.	—	—
8. Stake out right and left limit.	—	—
9. Stake out near and far edge.	—	—
10. Stake out down range and up range safety limit.	—	—
11. Stake out rear safety range.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
AR 210-20

Related

STP 31-18B34-SM-TG

References

Required

AR 385-63

FM 23-90

FM 23-91

Related

Plan for the Use of a Direct-Fire Range

331-201-2017

Conditions: As a Special Forces weapons sergeant, given the requirement to establish a direct fire range.

Standards: Plan and construct a direct fire range in accordance with (IAW) AR 210-20, *Master Planning for Army Installation*, and AR 385-63, *Range Safety*.

Performance Steps

1. Site selection (on level land).
 - a. In selecting a site, the sun should not set or rise into the Soldier's eyes to avoid target blindness.
 - b. Known distance ranges should have a horizontal line of fire.
 - c. Firing points on known distance ranges may be below the target, provided the grade between the points and targets does not exceed 2 percent.
 2. Layout of the surface danger zone.
 - a. Review AR 385-63 to determine surface danger area.
 - b. Plan perimeter descriptions and lay out maps using AR 210-20.
 3. Target planning area.
 - a. Target visibility.
 - (1) Planners must positively ensure that the targets are within safe limits and visible from firing points, positions, or lanes.
 - (2) Planners must consider the mobility or range support equipment and the target's ability to depict realism. Fleeting targets are typical in the combat environment and are usually the only targets that appear in the open.
 - (3) Targets should be placed at realistic distances. Vegetation, stumps, shell holes, and other items help the Soldier determine range.
 - (a) Place small-arms range targets 15 to 400 meters from the firing points.
 - (b) On large direct-fire ranges for antitank weapons, place 80 percent of the targets 75 to 2,000 meters from the firing points. Use a mix of 80 percent soft targets and 20 percent hard targets.
 - (4) Target protection is action taken to protect the new modern stationary target elevating mechanisms. The most common protection measures are:
 - (a) Target pads.
 - (b) Earth-retaining walls.
 - (c) Target coffins.
 4. Surface danger zones. AR 385-63 is the source for the Army policy for variations in surface danger zones. If the sites cannot accommodate the desired surface danger zones, alternatives may include—
 - a. Restricting gun tube elevation.
 - b. Using subcaliber ammunition.
 - c. Firing at negative elevations or into a hill mass.
 - d. Restricting direction and zone of fire.
 - e. Using special training devices.
- NOTE: If no practical alternative is available, planners may obtain waivers provided a reasonable degree of safety can be assured in firing operations. Detailed instructions on obtaining waivers can be found in AR 385-63.
5. Impact areas and ricochet control.
 - a. Tests clearly indicate that flat, level terrain, composed of soft soil, produces the fewest ricochets.
 - b. Impact areas for small-arms weapons should be free of exposed rock and boulders.

Performance Steps

- c. The ground along the flanks of the impact area should rise gently with the center open and level.
- d. Earth berms should be designed at the rear of the target area using loam and sandy soil to reduce ricochets and contain salvage metal.
- e. Salvage walls are another way to reduce ricochets on small-arms ranges. They also are used for the following reasons:
 - (1) Protection of post timber.
 - (2) Protection of post game.
 - (3) Recovery of spent projectiles for metal salvage.
 - (4) Visual identification of near target misses.
- f. Salvage walls should cover a portion of range flanks. For example, on the 25 meters zero range, salvage walls cover one-half of the distance from the firing line to the target area along the sides of the range.
- g. Backstops and side stops are also used to contain ricochets.

NOTE: Foreign Ranges—The requisition, use, and disposal of foreign ranges can present unique problems. Consider each range separately in light of existing foreign military rights, agreements, and subsidiary arrangements. Range managers should coordinate with State Department representatives, except when other diplomatic channels exist, for range operations and actions. If a real estate representative of the U.S. Corps of Engineers is serving in the foreign country, he can help negotiate and draft legal documents.

6. Safety acceptance inspection.

NOTE: Before units can begin normal operation in the target area, safety technicians must perform a safety acceptance inspection. This inspection includes a specifications check and a trail operation.

- a. Safety technicians ensure proper materials are used throughout the range.
- b. Safety technicians ensure proper measurements are used throughout the range.
- c. Target area measurements must meet rigid specification.
 - (1) Distance from the firing points to the target.
 - (2) Spacing of targets and firing points.
- d. The safety technicians conduct a trail operation of the range to ensure safety.
 - (1) Tracer ammunition should be fired to check fire hazard.
 - (2) After the tracer fire is completed, safety technicians check the normal live-fire operations for undetected deficiencies.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Plan correct dimension for specific direct-fire weapons.	—	—
2. Stake out safety dimensions for surface danger zone.	—	—
3. Determine dispersion pattern.	—	—
4. Stake out impact area.	—	—
5. Stake out ricochet area.	—	—
6. Stake out both secondary danger areas.	—	—
7. Stake out rear danger.	—	—
8. Stake out gun-to-target line.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required
AR 210-20

Related

References
Required
AR 385-63

Related

Subject Area 6: BORESIGHT A 60-MM OR 81-MM MORTAR

Boresight an M252 81-mm Mortar

071-086-0005

Conditions: As a gunner, given a mounted M252 81-mm mortar complete with sight, M45 boresight, screwdrivers, distant aiming point, and assistant gunner.

Standards: Boresight the mortar using the distant-aiming-point method. Both the sight unit and the boresight are aligned on the same aiming point (at least 200 meters from mortar), and all bubbles are level. The sight has a deflection of 0 mils and an elevation of 0800 mils. The mortar must be within two turns of center traverse.

Performance Steps

NOTE: After the mortar has been mounted, the sight is placed into the dovetail slot. A deflection of 0 mils and an elevation of 0800 mils are set onto the sight, and bubbles are level.

1. Boresight for elevation.
 - a. Attach the M45 boresight to the barrel below, touching the upper stop band (Figure 1). Center the cross-level vial by slightly rotating the boresight around the mortar barrel. Slight movements may be made by loosening the clamp screw and by lightly tapping the boresight body. When the bubble is centered, tighten the clamp screw.

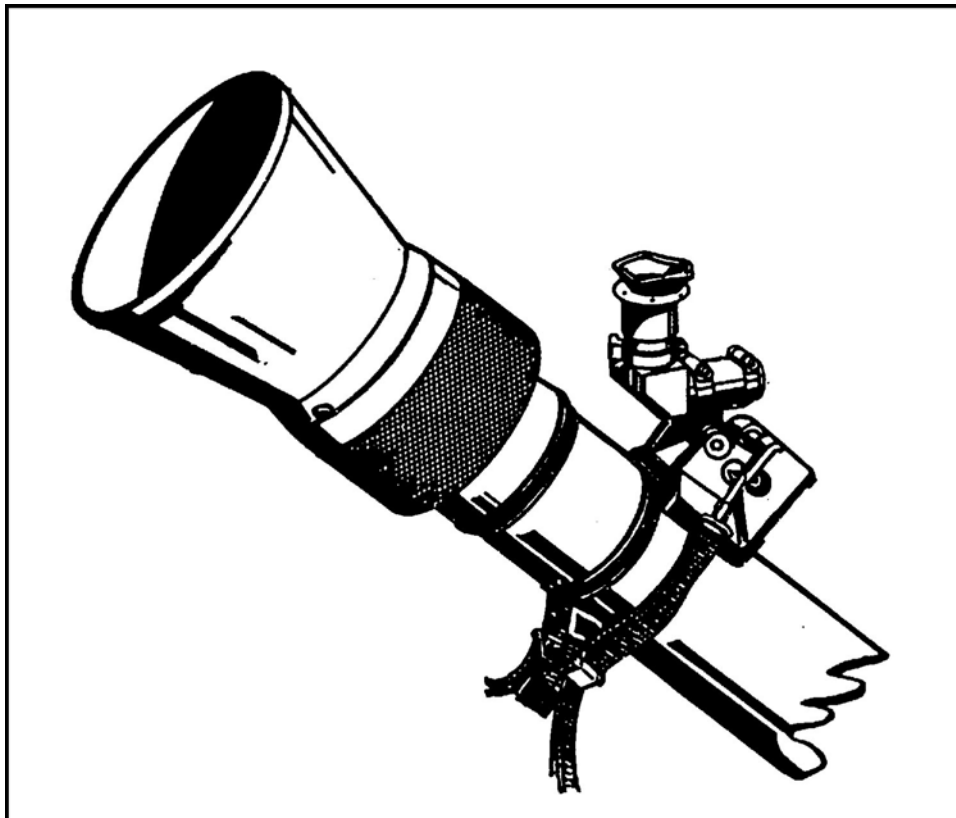


Figure 1. Boresighting With the M45 Boresight

- b. Ensure the sight is set at an elevation of 0800 mils.
 - c. Elevate or depress the barrel until the elevation vial on the M45 boresight is centered. The mortar is now set at 0800 mils (45 degrees) elevation.

Performance Steps

- d. Rotate the elevation knob on the sight until the elevation bubble is centered. If necessary, level the cross-level bubble.
- e. If the elevation scale does not read 0800 mils, adjust the scale as follows:
 - (1) Loosen the two slot-headed screws on the outside of the elevation knob. Slip the elevation fine scale until the 0 mark on the scale aligns with the reference mark on the housing. Tighten the two screws to secure the scale.
 - (2) Recheck that all bubbles are level.

2. Boresight for deflection.

- a. Ensure the M45 boresight is still attached to the barrel as shown in Figure 1.
- b. Ensure the sight is set at a deflection of 0 mils and is pointed to the rear.
- c. Select a distant aiming point that is as far from the mortar as possible, but not less than 200 meters.
- d. By shifting or traversing the mortar, align the vertical crossline of the boresight onto the distant aiming point.

NOTE: The mortar must remain within two turns of center traverse.

- e. Ensure that the crossline bubble remains centered, since the mortar may cant as it is traversed. With the boresight aligned on the distant aiming point, level the sight by centering the cross-level bubble.

NOTE: If the mortar is initially mounted on the distant aiming point, it decreases the amount of traverse needed to align the crossline on the distant aiming point after boresighting for elevation.

- f. With the boresight aligned on the distant aiming point and all bubbles on the sight and boresight centered, check that the vertical crossline of the sight is aligned with the distant aiming point. If it is not, proceed as follows:
 - (1) Turn the deflection micrometer knob until the vertical crossline of the sight is aligned with the distant aiming point. Lock the deflection knob.
 - (2) Slip the coarse deflection scale to read 0 mils against the white arrow below the scale by pushing down the scale and by rotating it. Once set at 0 mils, release the scale so that the internal springs return it to the LOCKED position.
 - (3) Slip the micrometer deflection scale by pushing the scalloped rim of the fine scale toward the sight body and by turning it until the fine scale reads 0 mils against the black scale. Allow the springs to return the scale to the LOCKED position.
 - (4) The red line on the inner coarse deflection scale should align with 32 on the coarse deflection scale. If not, lift up on the locking lever, pivot the elbow telescope out of the way, and loosen the two screws. Turn the inner coarse deflection scale until the red line is at 32. Tighten the two screws. Then reposition the elbow telescope and secure by pushing down on the locking lever.
 - (5) The fine deflection red index arrow should align with the red index line on the outer fine deflection scale. The fine deflection black arrow should align with 0 on the fine deflection micrometer scale. If not, tighten the deflection locking knob and loosen the two screws on the deflection knob. Depress the outer fine deflection micrometer scale, and set the red index line to the red index arrow. Depress the fine deflection micrometer scale, and turn to align 0 with the fine deflection black arrow. Tighten the two screws and loosen the deflection locking knob.

- 3. Ensure all bubbles are level, the scales read 0 mils and 0800 mils, and the boresight and the sight are aligned on the same point. If so, remove the boresight.

- 4. Index 3200 mils on the sight. The mortar is now prepared to be laid.

Evaluation Preparation: Setup: At the test site, provide all equipment and tools given in the task condition statement.

Brief Soldier: Tell the Soldier to use the equipment and tools provided, boresight the mortar for elevation and then for deflection. Point out to the Soldier the distant aiming point to use. Tell him the assistant gunner to assist shifting the mortar, if required.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Mounted the M45 boresight.	—	—
2. Placed a deflection of 0 mils and an elevation of 0800 mils on the M64 sight.	—	—
3. Laid the mortar so that the sight and boresight are on the same aiming point at least 200 meters away.	—	—
4. Ensured mortar remained within two turns of center traverse.	—	—
5. Leveled all bubbles on the sight and boresight (within outer red lines).	—	—
6. Corrected elevation scales, as required.	—	—
7. Checked alignment of sight and boresight on the distant aiming point.	—	—
8. Corrected deflection scales, as required.	—	—
9. Rechecked all bubbles, scales, and alignment on distant aiming point.	—	—

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
TM 9-1015-249-10

Declinate an M2 Aiming Circle

071-321-4000

Conditions: As a section sergeant, given an M2 aiming circle with accessories, and a declination station with at least two known directions.

Standards: Declinated the M2 aiming circle to within 1 mil.

Performance Steps

1. The section sergeant declinates the aiming circle—
 - a. When it is moved 25 miles (40 kilometers [kms]) or more from the area where it was last declinated.
 - b. After an electrical storm or after receiving a severe shock such as being dropped.
 - c. Every 30 days.
 - d. When it is initially received or returned from maintenance.
2. The section sergeant declinates the aiming circle.
 - a. Mount and level the aiming circle over the declinating station using the plumb bob (Figure 1).

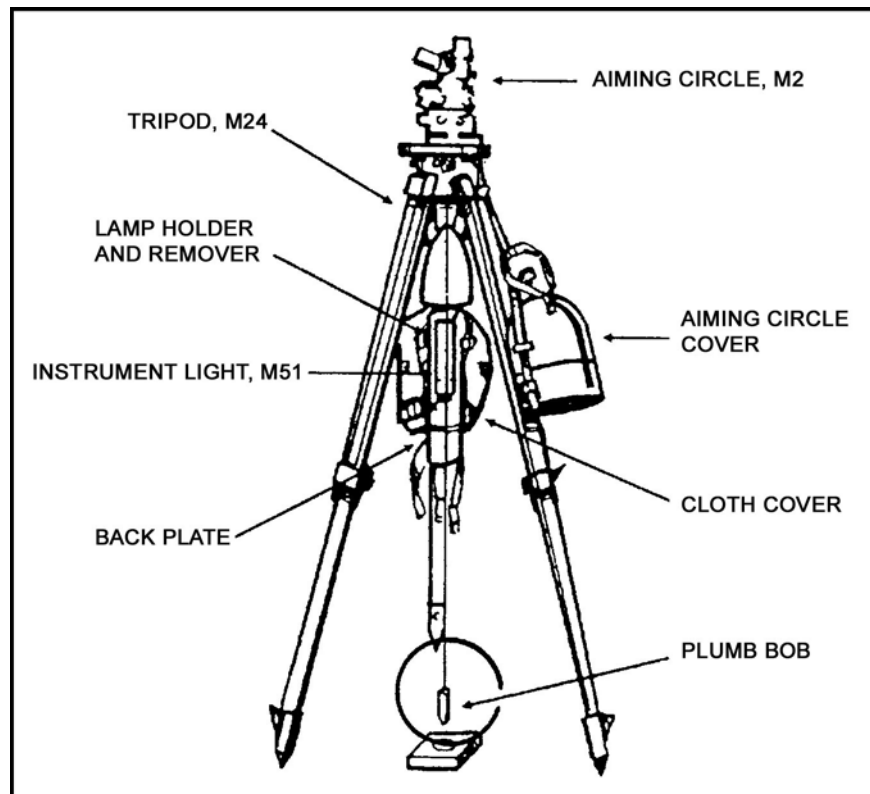


Figure 1. Aiming Mortar Barrel With Vertical Line of Aiming Circle Telescope Sight

- b. Set the known grid azimuth to one of the azimuth marks on the instrument using the recording motion.
- c. Place the vertical crossline of the telescope on the left edge of the azimuth mark using the non-recording motion. The aiming circle is now oriented on grid north.
- d. With the recording motion rotate the instrument to zero. Release the magnetic needle, look through magnifier, and use the azimuth micrometer to center the needle (Figure 2).

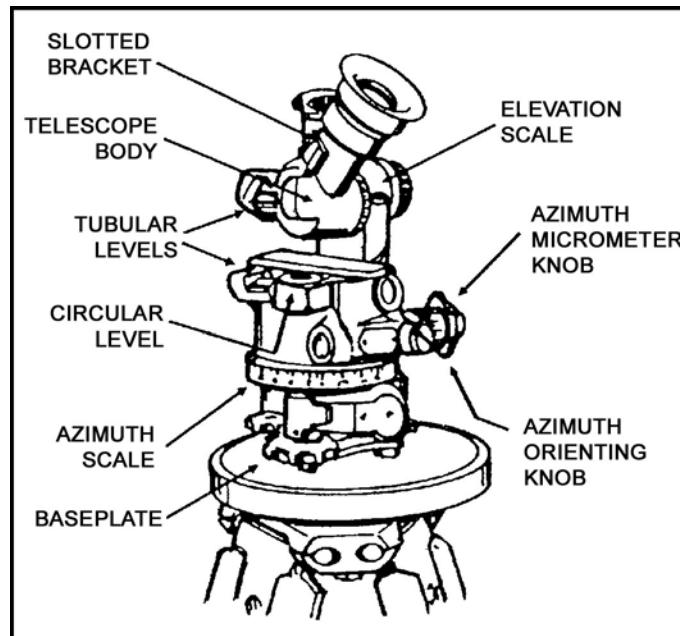
Performance Steps

Figure 2. Determining Angle A

- e. Determine the declination constant (mils off zero) from the azimuth scales to the nearest mil. Re-lock the needle.
- f. Use the above procedures to determine the declination constants to the remainder of the azimuth marks.
- g. Compare the declination constants to all azimuth marks. If they agree within 2 mils, determine the average and record it to the nearest 1 mil. If they vary more than 2 mils, repeat the entire process.

Evaluation Preparation: Setup: Provide the Soldier (at a declination station) with all equipment and information as stated in the task condition statement, and paper and pencil.

Brief Soldier: Tell the Soldier to set up the aiming circle, and place it over the declination point using the plumb bob. Then, using the known azimuths to the azimuth marks, determine the declination for the aiming circle.

Performance Measures

1. Correctly set up the aiming circle.
2. Placed the aiming circle directly over the declination point using the plumb bob and leveled the aiming circle, so that the tubular level is level in all positions.
3. Determined the declination constant for each azimuth marker.
4. Repeated Step 3 if any declination constant disagree is more than 2 mils.
5. Averaged the declination constant and determined the declination constant of the aiming circle.

NOTE: Step 4 is used only if the first set of declination constant disagree more than 2 mils.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
TM 9-1290-262-10

Boresight a Mortar for Deflection Using an M2 Aiming Circle

071-321-4001

Conditions: Given an M2 aiming circle, a mounted mortar complete with sight, a mortar crew, and a distant aiming point.

Standards: Boresight the mortar for deflection to 0-mil accuracy.

Performance Steps

1. Calibrate for deflection, using the aiming circle (angle method) when the boresight is not available.
 - a. The section sergeant sets up the aiming circle 25 meters to the rear of the mounted mortar.
 - b. With the azimuth scale and micrometer of the aiming circle at 0, the gunner aligns the vertical crossline on the center of the baseplug of the mortar by sliding the mortar sideways.
 - c. The gunner traverses and cross-levels the mortar until the center axis of the barrel from the baseplug to the muzzle is aligned with the vertical crossline of the aiming circle telescope reticle (Figure 1).

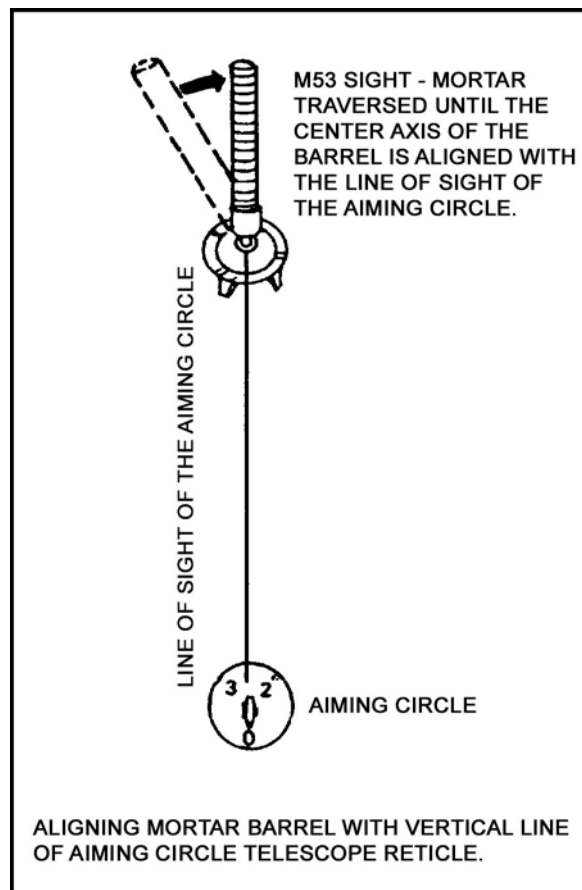


Figure 1. Align Barrel Axis with Telescope Reticle Vertical Crossline

NOTE: Traversing bearing should remain as near center as possible.

- d. The gunner is directed to turn the deflection knob of the sight until the vertical line is centered on the lens of the aiming circle, and angle A is read on the red scale of the sight (Figure 2).
- e. The section sergeant turns the azimuth micrometer knob of the aiming circle until the vertical crossline of the telescope lays on the center of the sight lens. He then reads angle B (Figure 2) opposite the azimuth scale index. If the sight is calibrated, the angles are equal.

Performance Steps

- f. If the angles are not equal, the gunner adjusts the sight by loosening the two boresight locking screws on the deflection knob of the sight and slipping the micrometer deflection scale until the arrow on the index aligns with the deflection reading of the aiming circle.

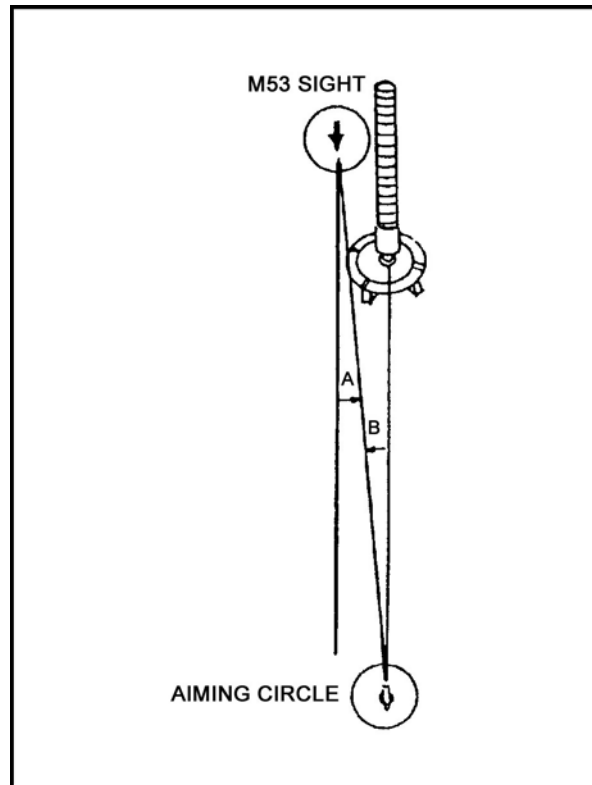


Figure 2. Calibrating the Mortar

2. Calibrate for deflection, distant-aiming-point method, using the aiming circle when boresight is not available.
 - a. The section sergeant sets up the aiming circle and aligns the vertical crossline on a distant aiming point (a sharp, distinct object not less than 200 meters distant).
 - b. The crew mounts the mortar on level ground about 25 meters from the aiming circle and on the line between the aiming circle and the distant aiming point.
 - c. The gunner centers the traversing bearing, and then cross-levels.
 - d. With the vertical line of the aiming circle still laid on the distant aiming point, the crew moves the mortar baseplate until the center of the baseplug aligns with the vertical line of the aiming circle.
 - e. The gunner traverses and cross-levels until the axis of the barrel, from baseplug to muzzle, aligns with the vertical line of the aiming circle.

NOTE: Traversing bearing should remain as near center as possible.

- f. The gunner is directed to lay the vertical line of the sight unit on the same distant aiming point using the micrometer knob. If the sight is calibrated, the deflection reading will be 3200. If it does not read 3200, the gunner loosens the screws in the base of the micrometer knob of the sight, slips the scale to 0, and retightens the screws.

Evaluation Preparation: Setup: At the test site, provide the following:

Station 1. Angle method of boresighting. Provide a mounted M2 aiming circle, a mounted mortar, a screwdriver, a gunner, and an assistant gunner. The mortar is mounted off-line so that it must be moved to align it with the aiming circle. The sight is then prepared to ensure a 5-mil to 10-mil error.

NOTE: There must be 25 meters between the aiming circle and the mortar.

Station 2. Distant-aiming-point method of boresighting. Provide a mounted aiming circle (M2), laid on a distant aiming point, a mounted mortar between the aiming circle and the distant aiming point, a screwdriver, a gunner, and an assistant gunner. The mortar is mounted off-line so that it must be moved to align with the aiming circle. The sight is prepared to ensure a 5-mil to 10-mil error.

NOTE: There must be 25 meters between the aiming circle and the mortar. The distant aiming point will be at least 200 meters from the aiming circle.

Brief Soldier: Tell the Soldier that he will be tested on both methods of boresighting with the aiming circle: the angle method and the distant-aiming-point method. Tell him that he is to operate the aiming circle and to talk the mortar crew through aligning the mortar with the aiming circle and each step of the boresighting procedure.

NOTE: The mortar crew is to be briefed correctly, following all instructions from the Soldier being tested.

Performance Measures

GO **NO GO**

1. Angle method.

- a. Indexed "0" on the azimuth scale of the aiming circle.
- b. Aligned the mortar with the aiming circle.
- c. Directed the gunner to lay the vertical crossline.
- d. Directed the gunner to give the Angle A reading from the red azimuth scale of the sight.
- e. Laid the vertical crossline of the aiming circle on the lens of sight.
- f. Read Angle B from the azimuth scale of the aiming circle.
- g. Directed and supervised the correcting of the micrometer scale of the sight to the Angle B reading.

2. Distant-aiming-point method.

- a. Aligned the aiming circle on the distant aiming point.

NOTE: During boresighting using this method, the aiming circle azimuth scale may be set on any reading.

- b. Directed the mortar crew to align the mortar with the vertical crossline of the aiming circle.
- c. Directed the mortar crew to lay the mortar sight on the distant aiming point.
- d. Directed the gunner to read from the red azimuth scale of the sight.
- e. Directed and supervised the correcting of the micrometer scale of the sight to 3200.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 9-1290-262-10

Boresight a Mortar for Elevation Using an M2 Compass

071-321-4002

Conditions: Given the M2 compass and mounted mortar complete with sight.

Standards: Boresight the mortar for elevation to 1-mil accuracy.

Performance Steps

The gunner boresights for elevation using the M2 compass when the M45 boresight is not available.

1. Center the traversing bearing.
2. Elevate the barrel to 800 mils.
 - a. Set an elevation of 800 on the elevation scale of the M2 compass.
 - b. Turn the compass on its left side and lay it on the top of the barrel.
 - c. Elevate or depress the mortar until the bubble is centered in the vial of the compass.
3. Cross-level the mortar and recheck the compass.
4. Center the elevation bubble of the sight by turning the elevation micrometer knob on the sight unit.
5. If the reading of the elevation of the sight is not 800 mils, and the reading on the elevation micrometer is not 0, make adjustments for elevation on the elevation scale and micrometer knob.

Evaluation Preparation: Setup: At the test site, provide the equipment and situation given in the task condition statement.

Brief Soldier: Tell the Soldier to boresight the mortar for elevation using the M2 compass.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Checked to ensure that the traversing bearing was centered.	_____	_____
2. Indexed 800 on the elevation scales of the sight and leveled the mortar.	_____	_____
3. Set an elevation of 800 mils on the elevation scale of the M2 compass.	_____	_____
4. Laid the left side of the M2 compass on the top of the mortar barrel.	_____	_____
5. Leveled the bubble in the M2 compass.	_____	_____
6. Checked the mortar cross-level bubble and leveled it, if needed.	_____	_____
7. Leveled the elevation bubble of sight using only the elevation micrometer.	_____	_____
8. Corrected elevation scales, if needed.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References Required

Related
TM 9-1290-333-15

Boresight a 60-mm Mortar
071-323-4103

Conditions: As the gunner, given a mounted 60-mm mortar complete with the M64 sight, M115 boresight, screwdrivers, a distant aiming point, an assistant gunner, and a requirement to boresight the 60-mm mortar.

Standards: Boresight the 60-mm mortar using either of the methods listed below:

1. Distant aiming-point method. Both the sight unit and the boresight will be aligned on the same aiming point (at least 200 meters from mortar) and all bubbles level (both sight and boresight). The sight will have a deflection of 3200 mils and an elevation of 800 mils. Mortar will not be more than two turns from center traverse.
2. Sight-case method. The sight case will be 10 meters or more from the mortar with the vertical crossline of the mortar sight aligned on the left edge of the yellow circle on the sight case and the vertical crossline of the boresight on the right side of the circle with all bubbles level (both sight and boresight). The sight will have a deflection of 3200 mils and an elevation of 800 mils. Mortar will not be more than two turns from center traverse.

Performance Steps

1. Preparing the 60-mm mortar for boresighting.
 - a. Mount the mortar with a deflection of 3200 mils and an elevation of 0800 mils with bubbles level.
 - b. Place the M115/M45 boresight on the mortar barrel and lay the vertical crossline on the aiming point, with all bubbles level.
2. Calibrating for elevation.
 - a. After ensuring that the elevation and cross-level bubbles are level, check the elevation bubble on the sight. If the bubble is not level—
 - (1) Turn the elevation micrometer knob on the sight until the elevation bubble is level.
 - (2) The coarse elevation index should point to 8; if not, loosen the two screws and slip the scale until 8 is indexed. Tighten screws.
 - (3) The fine elevation index should point to 0 on the scale on the elevation micrometer knob scale; if not, loosen the two screws on the end of the knob and slip the scale until 0 is indexed. Tighten screws.
 - b. The sight is now calibrated for elevation.
3. Calibrating for deflection using the distant-aiming-point method. After ensuring that the vertical crossline of the boresight is aligned on the distant aiming point (at least 200 meters) and the bubbles are level (sight and boresight), check the following:
 - a. The vertical crossline of the sight should also be laid on the same point. If not, turn the deflection micrometer knob until the vertical crossline of the sight is aligned on the same point as the boresight.
 - b. The coarse deflection scale index should point to 32. If not, press down on the coarse deflection scale until unlocked, turn the scale until 32 is indexed, and release the pressure until the scale is re-locked into position.
 - c. The red line on the inner coarse deflection scale should also align with 32 on the coarse deflection scale. If it does not, lift up on the locking lever, pivot the elbow telescope out of the way, and loosen the two screws. Turn the inner coarse deflection scale until the red line is at 32. Then tighten the two screws. Reposition the elbow telescope, and secure by pushing down on the locking lever.
 - d. The fine deflection index should point to 0 on the deflection micrometer knob scale. If not, push the scalloped rim of the fine scale toward the sight body until the scale is released. Turn the scale until 0 is indexed, release the scalloped rim, and relock the scale.

Performance Steps

- e. The fine deflection red index arrow should align with the red index line on the outer fine deflection scale. The fine deflection black arrow should align with 0 on the fine deflection micrometer scale. If it does not, tighten the deflection locking knob and loosen the two screws on the deflection knob. Depress the outer fine deflection micrometer scale and set the red index line to the red index arrow. Depress the fine deflection micrometer scale, and turn to align 0 with the fine deflection black arrow. Tighten the two screws and loosen the deflection locking knob.
4. Calibrating for deflection using the sight case.
 - a. A yellow or black circle is on one side of the sight case and is used only for boresighting the mortar when the distant aiming point cannot be used.
 - b. The procedure for this method is the same as for the distant-aiming-point method, except that the boresight and sight are laid on different aiming points.
 - (1) Place the sight case at least 10 meters from the mortar with the yellow or black circle facing the mortar.
 - (2) After ensuring that the bubbles on the boresight and sight are level, the assistant gunner moves the sight case right or left until the vertical crossline of the boresight is aligned on the right edge of the circle.
 - (3) Looking through the sight, ensure the vertical crossline of the sight is aligned on the left edge of the circle. If not, proceed with calibrating the sight for deflection as with the distant-aiming-point method.
5. Using the M45 boresight. The M45 boresight is an acceptable replacement for the M115 boresight.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to use the equipment and information provided and boresight a 60-mm mortar using the distant-aiming-point method and sight-case method, with or without, the aid of an assistant gunner.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Distant-aiming-point method:	_____	_____
a. Placed a deflection of 3200 mils and an elevation of 0800 mils on the sight unit.		
b. Leveled all bubbles on the sight unit and boresight.		
c. Aligned both vertical crosslines of the sight and boresighted on the same aiming point.		
d. Ensured mortar was not more than two turns from center traverse.		
e. Corrected scales that need correcting.		
2. Sight-case method:	_____	_____
a. Ensured sight case was at least 10 meters from the mortar position.		
b. Ensured sight had a deflection of 3200 mils and an elevation of 0800 mils.		
c. Leveled all bubbles on the sight unit and boresight.		
d. Aligned the vertical crossline of the boresight on the right edge of the circle.		
e. Aligned the vertical crossline of the mortar sight on the left edge of the yellow or black circle on the sight case.		
f. Ensured mortar was not more than two turns from center traverse.		
g. Corrected scales that needed correcting.		

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

STP 31-18B34-SM-TG

**References
Required**

Related
FM 23-90
FM 23-91
TM 9-1010-223-10

Subject Area 7: 60-MM AND 81MM MORTARS

Maintain Fire Control Equipment**071-076-0001**

Conditions: Given a sight (M53 or M64), instrument light (M53 or M42), aiming post lights (M14, M58, or M59), and aiming posts (M1A2 or M14). Provide necessary cleaning equipment.

Standards: Inspect all items, lightly lubricate moving parts, and clean and spot-paint as needed.

Performance Steps

1. Sighting and fire control equipment must be maintained.
 - a. Inspection. Inspect all parts for cracks, excessive wear, and rust. Lightly lubricate moving parts (but not switches) so they operate smoothly. Remove rust with a crocus cloth, and paint the spot if it is on a painted surface. Coat nameplates and serial numbers with clear lacquer.
 - b. Sight units (M53 and M64).
 - (1) Ensure lenses are clean and dry; dovetail bracket is free of burrs and dents; knobs operate smoothly; and deflection/elevation scales are dry.
 - (2) Remove dust from lenses with camel's-hair brush; wipe each lens with lens cleaning tissue. Remove grease or oil from the lens with lens cleaning compound. Remove oil from the deflection/elevation scales with a clean, dry rag.
 - (3) Lubricate sight locking devices with a small amount of preservative lubricate (PL) special preservative.
 - c. Aiming post lights.
 - (1) Aiming post light (M14).
 - (a) Ensure the battery case is dry and free of corrosion and rust; light bulb works, switch operates smoothly and locks at desired setting; filters are clean; and clamp holds the unit firmly to the aiming post and does not bend out of shape.
 - (b) Remove rust from the case with crocus cloth; remove corrosion with a toothbrush and rag; dry entire item with rag; and clean filters with lens tissue.
 - (2) Aiming post lights (M58 and M59).
 - (a) The aiming post lights come in sets of three: two green and one orange. Ensure lenses are not cracked and the attachment bracket is not bent or broken.
 - (b) Remove corrosion with a toothbrush and rag; dry entire item with a rag; and clean lens with lens tissue.
 - d. Instrument light (M53 or M42).
 - (1) Ensure that the rheostat knob operates smoothly and remains at the desired setting; battery case is dry and free of corrosion and rust; lightbulbs work. Check cables for bad insulation.
 - (2) Remove rust from battery contacts with a crocus cloth; remove corrosion with a toothbrush and rag; wipe cables with a clean, dry rag.
 - e. Aiming posts (M1A2 and M14).
 - (1) Check for proper fit; ensure joints are not dented or bent out of shape; and check for cleanliness and scratched or chipped body.
 - (2) Clean with dry rags; sand chipped paint with a crocus cloth and repaint as necessary.
2. The following precautions must be observed with the sight unit (M64) and aiming post lights (M58 and M59).
 - a. Safety precautions. The radioactive material used in these instruments is tritium gas (H3) sealed in glass tubes. It poses no hazard to the user when intact. These sources illuminate the instrumentation for night operations. Tampering with or removing the sources in the field is prohibited by federal law. If there is no illumination, the radiological protection officer must be notified. If skin contact is made with any area contaminated with tritium, the area must be washed immediately with nonabrasive soap and water.

Performance Steps

- b. Identification. Radioactive self-luminous sources are identified by means of radioactive warning labels (Figure 1). These labels should not be defaced or removed, and should be replaced immediately when necessary. The local radiological protection officer should be consulted for instructions on handling, storage, or disposal.



Figure 1. Radioactive Warning Label

Evaluation Preparation: Setup: At the test site, provide all equipment required for the type of mortar assigned and necessary cleaning equipment.

Brief Soldier: Tell the Soldier that he is to inspect, detect, and report unserviceable components as he cleans, lubricates, and spot-paints the fire control equipment.

Performance Measures

1. Inspected all equipment and report unserviceable items.
2. Cleaned and lubricated as needed.
3. Removed rust and spot-paint.
4. Covered nameplates and serial numbers with clear lacquer.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 7-90

Maintain a 60-mm Mortar
071-084-0002

Conditions: As a member of a 60-mm mortar crew, given a 60-mm mortar and special tools, material, and equipment needed to perform the required maintenance.

Standards: Inspected, cleaned spot-painted, and lubricated the mortar. For defective items that cannot be corrected by the operator or if the bipod assembly or sight assembly has been immersed in water, notify organizational maintenance personnel immediately.

Performance Steps

1. Clean and lubricate:

NOTE: DO NOT use cleaner, lubricate, or preservative (CLP) to clean or lubricate the mortar.

- a. Spot-paint parts that are painted.
- b. Coat nameplates and serial numbers with clear lacquer.
- c. At least once every six months, check for application of modification work orders.

2. Canvas/plastic/vinyl items:

- a. Check for loose grommets, loose buckles, rips, mildew, rotting, grease, and dirt.
- b. Remove mildew with a dry cloth. Remove oil, grease, and dirt with soap and warm water; rinse with clear water.

3. Barrel assembly:

- a. Inspect for dirt, carbon, and cracks/dents/bulges; remove firing pin and check for cracks/wear.
- b. Place firing selector at T, S, and D positions and check firing mechanism. Trigger should not fire with selector at S.
- c. Remove dirt with rags and remove carbon with rifle bore cleaner.
- d. Oil barrel and bore.

4. Bipod assembly:

- a. Check for cleanliness and ensure that:
 - (1) Sliding bracket grips bipod leg firmly when locking nut is tightened.
 - (2) Adjusting nut precisely controls the cross-levels and has a minimum of looseness.
 - (3) Elevating mechanism operates smoothly up and down.
 - (4) Traversing mechanism operates smoothly over entire range in both directions.
 - (5) Shock absorbers return to normal position when pulled down.
- b. Clean with dry rags.
- c. Lubricate with oily cloth; oil internal parts of elevating and traversing mechanism.

5. Baseplate assemblies, M7 and M8:

- a. Check the M7 for scratches or chipped surfaces, bent or broken ribs; check socket for smooth operation; and check the assembly for overall cleanliness.
- b. Check the M8 for scratches or chipped surfaces, bent or broken ribs; check socket latch for smooth operation.
- c. Clean with rags, and spot-paint.
- d. Lubricate moving parts.

NOTE: Notify immediate supervisor and the organizational mechanic if a defective item is detected that cannot be corrected by cleaning, lubricating, spot-painting, adjusting, or if the following items have been immersed in water.

1. Elevating mechanism (bipod).
2. Traversing mechanism (bipod).
3. Shock absorbers (bipod).
4. (Optical parts (sight).

NOTE: Conduct a check on learning and summarize the enabling learning objective.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to use the tools and material provided and perform operator maintenance on a 60-mm mortar and associated fire control equipment. Tell the Soldier to inform you of any defect that he cannot correct.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Spot-paint parts that are painted.	_____	_____
2. Coat nameplates and serial numbers with clear lacquer.	_____	_____
3. Check canvas items for rips, oil, grease, mildew, and dirt.	_____	_____
4. Check barrel assembly for dirt, carbon, and cracks/dents/bulges.	_____	_____
5. Check firing selector at T, S, and D positions.	_____	_____
6. Clean and oil barrel and bore.	_____	_____
7. Check and clean bipod assembly.	_____	_____
8. Check and clean baseplate assembly.	_____	_____
9. Lubricate all moving parts.	_____	_____

**References
Required**

Related
TM 9-1010-223-10

Perform Misfire Procedures on a 60-mm Mortar While in the Handheld Mode
071-084-0003

Conditions: Given a 60-mm mortar being fired in the handheld mode, a misfire condition, and an assistant.

Standards: The round was caused to fire, removed from the barrel, or the barrel with misfired round secured and reported to the chain of command.

Performance Steps

1. Announce "MISFIRE."

NOTE: The crew will evacuate 50 meters to the side of the mortar. However, this is not a standard for the gunner.

2. Attempt to fire the round.
- a. Place the selector switch on "S".
 - b. Bounce the mortar (attempt to dislodge the round).
 - c. Place the selector switch on "T".
 - d. Activate the trigger mechanism twice.

NOTE: If the round fires, proceed to step 3. If the round does not fire, proceed to step 4.

3. Check/dump/swab the bore and continue the mission.

WARNING: Never stand in front of the tube while removing a round. After raising the base of the mortar, do not lower it again until the round is removed (the round may slide to the base and fire). Never put your hands in front of the muzzle.

4. Remove the round from the tube.

Evaluation Preparation: Setup: At the test site, provide all equipment and material given in the task condition statement.

Brief Soldier: Tell the Soldier that, using the materials and information provided, the Soldier must perform misfire procedures on a 60-mm mortar while in the handheld mode.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Announced "MISFIRE."	_____	_____
2. Attempted to fire the round.	_____	_____
3. Checked/dumped/swabbed the bore.	_____	_____
4. Removed round from the tube.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show what was done wrong and how to do it correctly.

References
Required

Related
FM 23-90
TM 9-1010-223-10

Engage Targets With a 60-mm Mortar While Firing in the Handheld Mode

071-084-0004

Conditions: As the gunner, given a 60-mm mortar barrel, M8 baseplate, firing position, high-explosive (HE) ammunition, target observable from the firing position (not to exceed 1,000 meters), and assistant gunner and squad leader.

Standards: Engage the target, firing in the hand-held mode, using no more than four rounds and not to exceed charge 1. Last round fired must impact within 50 meters of the target.

Performance Steps

1. Direct-lay method. During engagement of a target using the handheld, direct-lay method, the gunner has full responsibility for placing effective fire on the target.

DANGER: THIS PROCEDURE SHOULD BE USED ONLY WHEN DESTRUCTION OF THE TARGET IS MORE IMPORTANT THAN THE SAFETY OF THE CREW.

- a. If the mortar is fired at a range greater than 300 meters with charge 0 or 900 meters with charge 1, the baseplate must be braced against some type of support—for example, stump, tree, rock, or sandbags. This stops the mortar from kicking back and unseating the baseplate.
- b. The most accurate method of fire in the handheld mode is by trigger fire; however, drop fire may be used when a greater volume of fire is needed.

NOTES:

1. When firing trigger fire, the gunner must dig in and seat the baseplate as much as possible before firing the first round.

2. When firing trigger fire, the gunner must release the trigger after a round is fired or the mortar will drop fire on the next round.

c. When ready to take the target under fire—

- (1) The gunner places the selector on “T” (trigger fire).
- (2) The gunner points the barrel in the direction of the target.
- (3) The gunner indexes the floating ball of the range indicator at the estimated range for the charge being used.
- (4) The assistant gunner prepares the round with the correct charge and fuse setting. On order from the gunner, he drops the round down the mortar barrel.
- (5) The gunner carefully aligns the target over the top of the barrel or along one side of the barrel, ensuring that the range is indexed, then slowly squeezes the trigger. Jerking the trigger will throw the round off target.
- (6) After firing the round, the gunner observes the impact of the round, determines the range to fire, and how much left or right of the target he will have to go to pick his new aiming point and then repeats procedures (1) through (5).

NOTE: The next round to be fired should be loaded during the time of flight of the preceding round.

2. Direct-alignment method. Although the 60-mm mortar can be fired handheld in the direct-alignment method, it is not recommended.

Evaluation Preparation: Setup: At the test site, provide all equipment and material given in the task condition statement.

Brief Soldier: Tell the Soldier to use the materials and information provided and place effective fire on the target.

Performance Measures

1. Gunner placed the selector on “T” (trigger fire).
2. Gunner pointed the barrel in the direction of fire.

GO **NO GO**

Performance Measures**GO****NO GO**

3. Gunner aligned the target over the top of the barrel or along one side of the barrel.

4. Gunner indexed the range.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-90

TM 9-1010-223-10

Maintain an 81-mm Mortar
071-086-0002

Conditions: As a member of an 81-mm mortar crew, given an 81-mm mortar and tools, equipment, and materials necessary to perform the required maintenance.

Standards: Inspect, clean, spot-paint, and lubricate the mortar in accordance with (IAW) the training information outline below. If there are defective items that cannot be corrected by the operator, or if the bipod assembly has been immersed in water, notify organizational maintenance personnel immediately.

Performance Steps

1. Lubricating Instructions:

NOTE: These lubrication instructions are mandatory

- a. General purpose lubricating oil (GPL oil) is the prime lubricant. LAW may be used for continuous subzero environments.
- b. Intervals are based on usual operating conditions. For unusual operating condition, perform the lubricating procedures more often. When the weapon is not in use, the intervals may be extended if proper lubrication procedures have been followed.
- c. Dry cleaning solvents (SD) and paint thinners (TPM) are flammable. Do not clean parts near an open flame or in a smoking area. Dry cleaning solvents and paint thinners evaporate quickly and have a drying effect on the skin. When used without protective gloves, these chemicals may irritate or crack the skin.

2. Clean parts with dry cleaning solvent and dry before lubricating.

3. Lubrication.

- a. Inspect for dirt, carbon, cracks, dents, and bulges; remove firing pin and check for cracks and wear. Check color graduation marks; they should be 1 1/2 inches long, and 17 and 21 inches from the muzzle.
- b. Remove dirt with rags, and remove carbon with rifle bore cleaner.
- c. Oil barrels and bore.
- d. Repaint graduation marks.

4. Lubricate the cannon bore, firing pin, and outside surfaces with GPL-oil once a week.

5. Bipod assembly.

NOTE: Immediately after firing, and for two consecutive days thereafter, clean the cannon bore with RBC. After the third cleaning, wipe dry and lightly coat with general purpose lubricating oil. When mortar is not being fired, clean weekly with RBC, and lubricate with general purpose lubricating oil.

NOTE: Clean and wipe the entire outside of cannon, bipod, and baseplate with general purpose lubricating oil weekly.

NOTE: Carefully clean, or as needed, the cooling fins at breach end of cannon to assure maximum heat transfer. Do not allow dirt or foreign matter to build up on the cooling fins.

NOTE: Mortar mount should be cleaned and lubricated semiannually by support maintenance.

NOTE: Move to Gun Line and perform PE.

NOTE: Conduct a check on learning and summarize the enabling learning objective.

- a. Check for cleanliness and ensure that—
 - (1) Sliding bracket grips bipod leg firmly when locking nut is tightened.
 - (2) Adjusting nut precisely controls the crosslevel and has a minimum of looseness.
 - (3) Elevating mechanism operates smoothly up and down.
 - (4) Traversing spindle operates smoothly over entire range in both directions.

Performance Steps

- (5) Shock absorber clevis, when pulled out, returns to normal position.
- b. Clean with dry rags and spot-paint.
- c. Lubricate with oily cloth; oil internal parts of elevating and traversing mechanisms.
 - (1) Elevating mechanism (bipod).
 - (2) Traversing mechanism (bipod).
 - (3) Shock absorber (bipod).
 - (4) Optical parts (sight).
- 6. Baseplate assembly, M23A1 and M3.
 - a. Check the M23A1 for scratched or chipped surfaces, and bent or broken ribs; check the socket for smooth operation; check latches for locking action; and check the assembly for overall cleanliness.
 - b. Check the M3 for scratched or chipped surfaces, and bent or broken ribs; check the socket for smooth operation; and check the assembly for overall cleanliness.
 - c. Clean with rags and spot-paint.
 - d. Lubricate moving parts.

NOTE: Notify immediate supervisor and the organization mechanic if a defective item is detected that cannot be corrected by cleaning, lubricating, spot-painting, or adjusting, or if the following items have been immersed in water:

- 1. Elevating mechanism (bipod).
- 2. Traversing mechanism (bipod).
- 3. Shock absorber (bipod).
- 4. Optical parts (sight).

Evaluation Preparation: Setup: At the test site, provide all equipment, tools, and information given in the task conditions statement.

Brief Soldier: Tell the Soldier that, using the equipment, tools, and information provided, he must perform operator maintenance on an 81-mm mortar and associated fire control equipment.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Spot-painted parts that are painted.	_____	_____
2. Coated nameplates and serial numbers with clear lacquer.	_____	_____
3. Checked and cleaned barrel assembly.	_____	_____
4. Checked and cleaned bipod assembly.	_____	_____
5. Checked and cleaned baseplate assembly.	_____	_____
6. Lubricated all moving parts.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-90

TM 9-1220-246-12&P

Perform Safety Checks on an M252 81-mm Mortar
071-086-0004

Conditions: As a gunner, given a mounted M252 81-mm mortar complete with sight.

Standards: Make the safety checks to ensure the mortar is safe to fire.

Performance Steps

1. Check mask and overhead clearance as follows:
 - a. To determine mask clearance, lower the barrel to 0800 mils elevation and sight along the base of the barrel with the eye near the baseplate.
 - b. To determine overhead clearance, raise the barrel to 1500 mils elevation and with the elevation bubble level, sight along the top of the barrel with the eye near the baseplate.

NOTE: If full range of elevation cannot be obtained, raise or lower barrel until rounds clear obstruction, turn elevation knob on sight until bubble is level, read the elevation, and report it to the squad leader who, in turn, reports it to the fire direction center (FDC).

2. Check the mortar to ensure:
 - a. The barrel is locked to the baseplate and the open end of the socket cap is pointing in the direction of fire.
 - b. The firing pin recess is facing upward.
 - c. The bipod-locking latch is locked, securing the barrel clamp.
 - d. The leg-locking hand-wheel is tight.

NOTE: Move to gun line and perform practical exercise (PE).

NOTE: Conduct a check on learning and summarize the enabling learning objective.

Evaluation Preparation: Setup: At the test site, provide a mounted M252 81-mm mortar complete with sight.

Brief Soldier: Tell the Soldier to use the mortar provided and to perform safety checks.

Performance Measures

GO **NO GO**

NOTE: Not to be sequence scored.

NOTE: The following requirements must be met to perform safety checks on an M252 81-mm mortar.

- | | | |
|--|-------|-------|
| 1. Checked mask and overhead clearance. | _____ | _____ |
| 2. Ensured the barrel was locked to the baseplate and the open end of the socket cap was pointed in the direction of fire. | _____ | _____ |
| 3. Ensured the firing pin recess was facing upward. | _____ | _____ |
| 4. Ensured the bipod-locking latch was locked and secured the barrel clamp. | _____ | _____ |
| 5. Ensured the leg-locking handwheel was tight. | _____ | _____ |

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
 TM 9-1015-249-10

Prepare 81-mm Mortar Ammunition for Firing 071-321-3905

Conditions: As the ammunition bearer for an 81-mm mortar, given an M25 fuze setter, M18 fuze wrench, strap wrench, and any of the following types of round and fuzes: ROUND = M374A2 (high explosive [HE]) w/fuze; FUZE = M524A5, M532 ROUND = M374A2 (HE) w/o fuze; FUZE = M532, M524A5 - ROUND = M375A2 (white phosphorus [WP]); FUZE = M524A5, M532 ROUND = M301A2 (A3) (illumination [illum]); FUZE = M84A1 - Type of round, charge, fuze, and fuze setting will be given in the form of an initial fire command.

Standards: After the fire direction center gives the initial fire command, select the correct round and set the fuze (when applicable) and charge for the fire command given.

Performance Steps

1. Identify rounds (Figure 1).

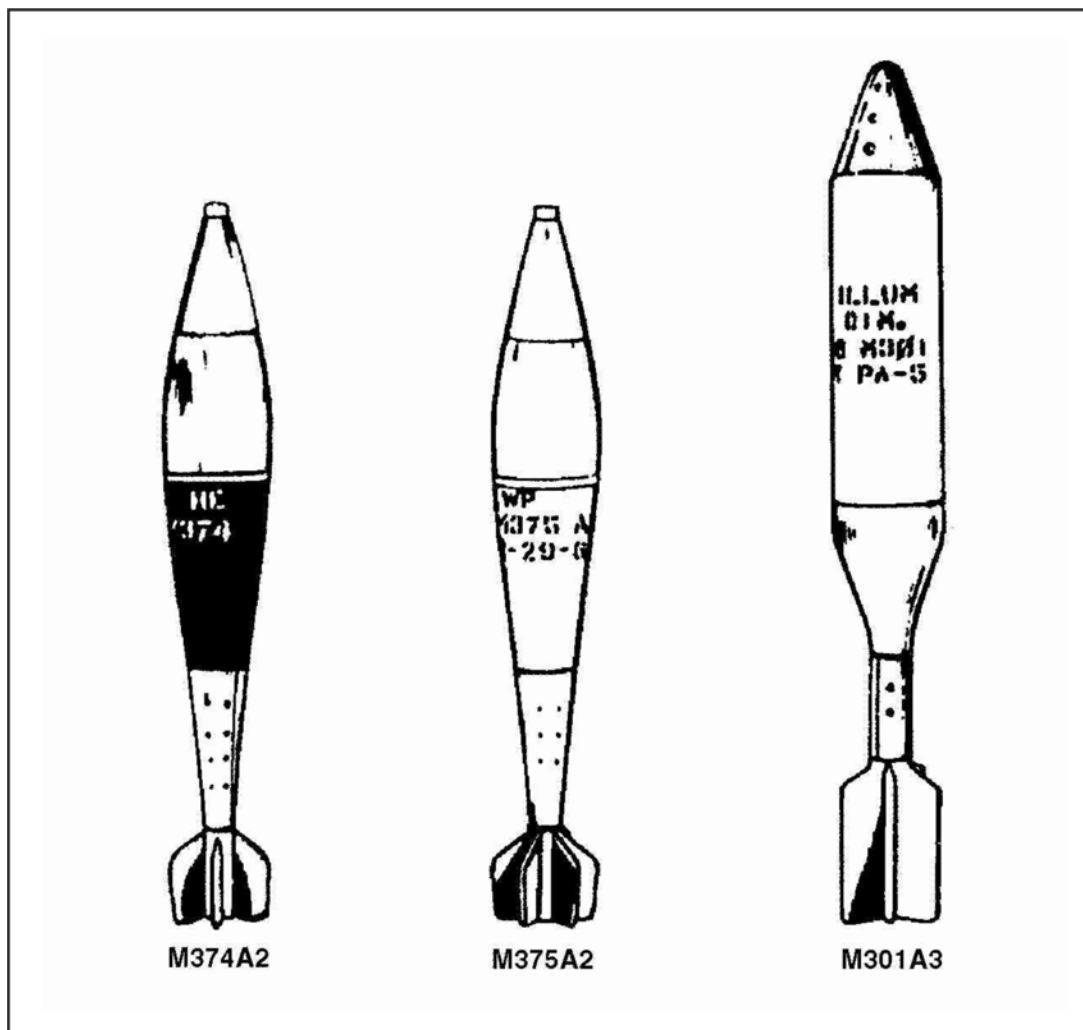


Figure 1. Standard 81-mm Mortar Ammunition

- a. High explosive - olive drab (OD) with yellow markings.
- b. White phosphorus - light green with red markings.

Performance Steps

c. Illumination - white with black markings.

2. Set fuses.

a. M524A5 (Figure 2).

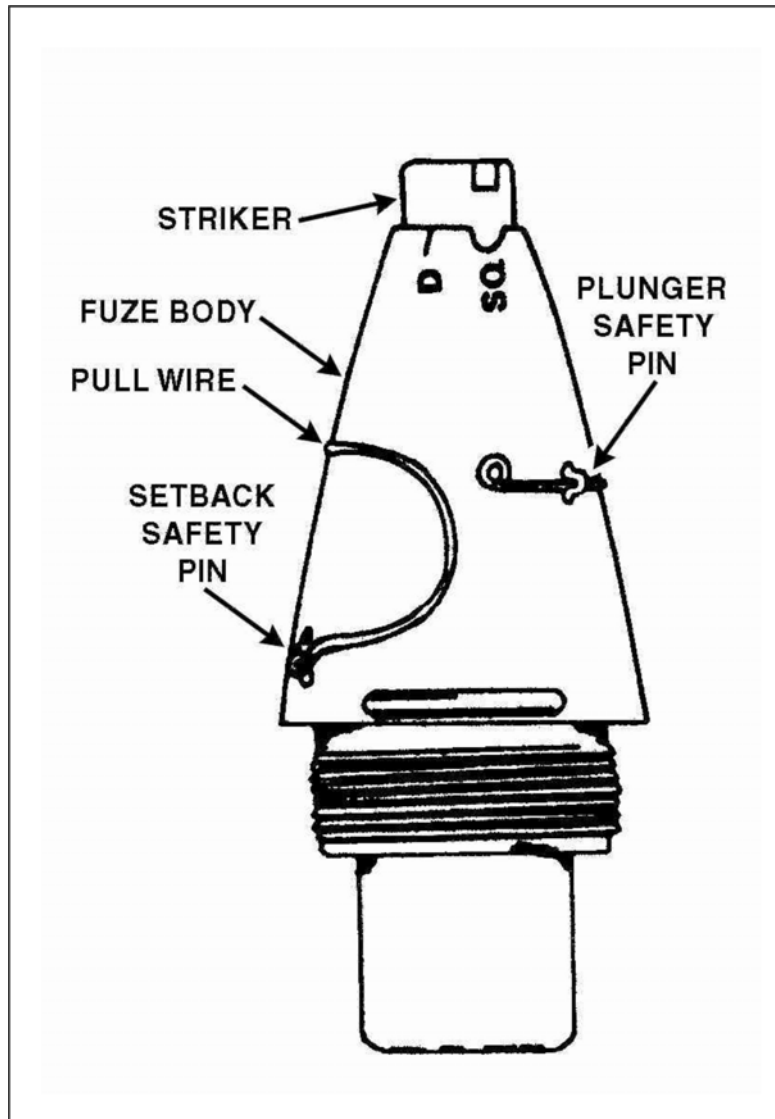


Figure 2. M524A5 Fuze

- (1) To prepare for firing, turn the slot in the striker to align with the SQ index for "super quick" or D index for "delay" on the fuse body, depending upon which action of fuse is desired.
 - (2) Just before insertion of round into the mortar, remove the safety pull wire, which removes both safety pins.
 - (3) The M524A5 does not arm for at least 1.25 seconds after firing, but arms within 2.5 seconds after firing.
- b. M532 (proximity) (Figure 3).

Performance Steps

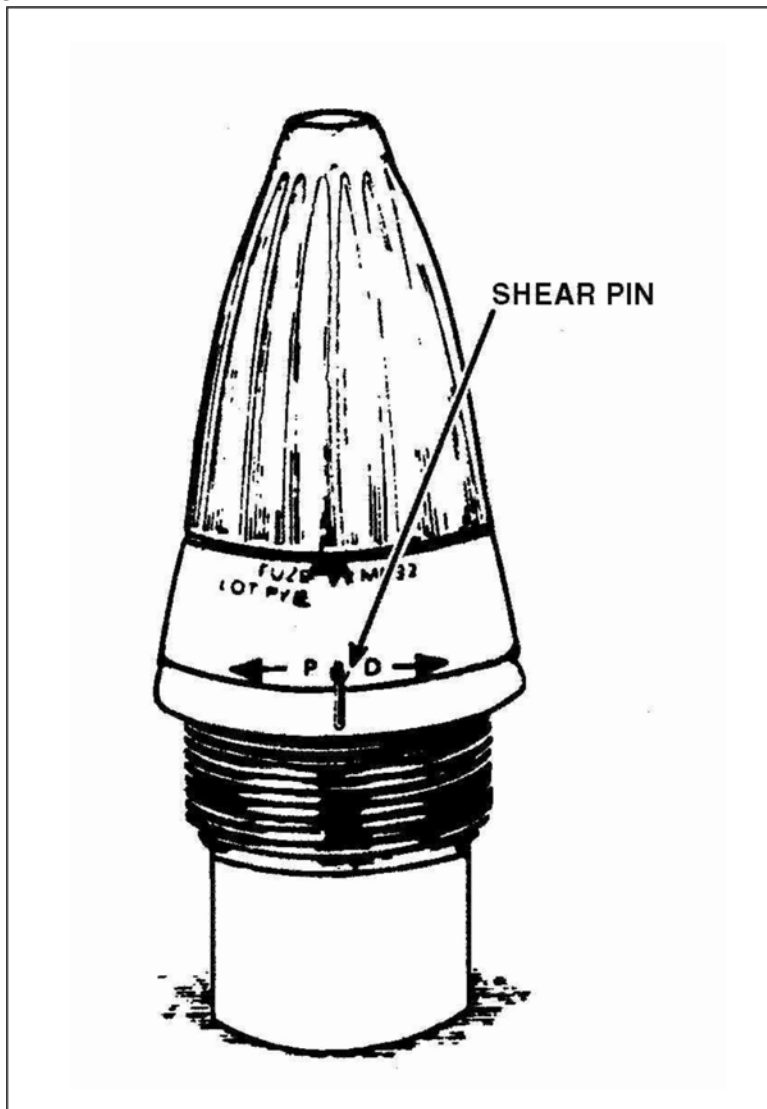


Figure 3. M532 Fuze

- (1) To prepare the M532 fuse for firing, place it on the round, as there are no rounds manufactured with the M532 fuse attached.
 - (2) To attach the fuse to the round, use the M18 fuse wrench and the strap wrench. Insert the fuse (with wavy washer in position) use the M18 wrench to tighten the fuse to the body so no clearance exists between the fuse and the body of the projectile.
 - (3) This fuse provides an airburst 1 to 6 meters above the target, depending on the angle of fall. The lower the angle of fall, the higher the burst. The higher the angle of fall, the lower the burst.
 - (4) To convert the round to point detonating, super quick (PDSQ). This procedure breaks rotating the top portion of the fuse one-third turn in either direction. The external shear pin and internal wiring. There is no delay capability for this fuse.
- c. M84 and M84A1.
- (1) The M84 is a time fuse that can be set to function at any time, in seconds, from time of firing.
 - (a) The M84 has a time scale numbered from 1 to 25 seconds in 1-second intervals.
 - (b) The M84A1 has a time scale numbered from 0 to 50 seconds in 2-second intervals.

Performance Steps

- (2) The M25 fuse setter is used to set the time by placing it over the six raised ribs on the fuse and turning counterclockwise until the desired time is indexed.

NOTE: If the time setting has been passed, do not turn fuse back. Continue turning counterclockwise and start over.

- (3) Setting charge. The charge given in the fire command is the number of charges to remain on the round. To remove charges, unbutton each increment (charge) and ensure that all charges removed are not taken from one side. When firing charge 1, use only the yellow spiral charge; charges 2 through 9 are white.

- (4) Checking for serviceability. Inspect all rounds and fuses for serviceability prior to firing.

CAUTION: To transport mortar ammunition in mortar carriers, rounds will be stored in ammunition racks in their fiber containers with seals unbroken. During firing, only the number of rounds required for the mission will be prepared for immediate expenditure. Protect the propelling charges and ignition cartridge of these rounds by slipping one end of a fiber container over the base of the round. Unused rounds will be repacked, and unused charges will be kept in a container (ammunition box) with the lid closed and will be disposed of in accordance with unit standing operating procedure (SOP).

Evaluation Preparation: Setup: Evaluate this task on a live- fire range. At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to prepare 81-mm mortar ammunition for firing.

Performance Measures**GO** **NO GO**

1. Identified the ammunition.

- a. HE.
- b. WP.
- c. Illum.

2. Set the fuses in the following manner:

- a. Turned the slot in the striker to align D for delay or SQ for super quick.
- b. Pulled the safety wire and pins before firing the round.
- c. Used the M18 fuse wrench and strap wrench to emplace an M532 fuse.
- d. Tightened the fuse to the body of the round so that no clearance exists between the fuse and the body of the projectile.
- e. Used the M25 fuse setter to set the time setting on the M84 or M84A1 fuse.
- f. Turned the fuse counterclockwise until the desired time was indexed.
- g. Did not remove all charges from one side of the round.

3. Checked for serviceability.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-90

Store Mortar Ammunition 071-321-4012

Conditions: As a squad leader, given the mission of storing a designated amount of high explosive (HE), white phosphorus (WP), or illumination ammunition for the 4.2-inch, 81-mm, 60-mm, or 120-mm mortar in a ground storage area, or in an M125A1 or M106A1/A2 mortar carrier.

Standards: Store the ammunition so that the stored ammunition and storage site meet storage requirements.

Performance Steps

1. Selection of the storage site.
 - a. Select an area that is flat and slightly higher than the surrounding terrain to prevent rainwater from getting under the stacked ammunition.
 - b. Never select a storage site in a depression, a gully, or at the base of a hill.
 - c. Whenever possible, select a site under trees or bushes. In addition to camouflaging the ammunition, foliage provides shade and some protection from the elements.
2. Preparation of the storage site.
 - a. In preparing the site, use some type of dunnage to keep the ammunition at least 6 inches off the ground. The dunnage may be logs, pallets, perforated steel planking, empty ammunition boxes, or whatever else can be found.
 - b. Prepare a separate storage site for each type and lot number of ammunition to be stored. If there are separate fuzes, prepare a site for them.
 - c. Dig suitable trenches around the outer edge of the dunnage to prevent water from flowing under the ammunition.
3. Stacking ammunition in the storage area.
 - a. The recommended method for temporary field stacking and storage of boxed HE and illumination ammunition is shown in Figure 1. This method of stacking provides some ventilation that permits open, uncovered storage of ammunition for several months without extensive deterioration of boxes or ammunition.

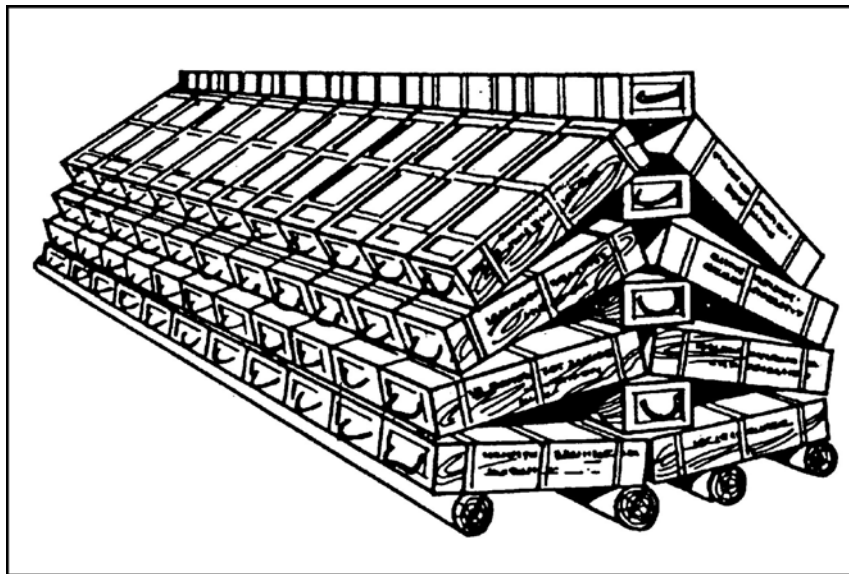


Figure 1. Temporary Field Stacking and Storage

Performance Steps

- b. Boxed WP ammunition must be stored on the dunnage, FUZE UP. WP ammunition should not be stacked more than one layer (one box) high. There must be space between boxes and rows for ventilation (Figure 2).

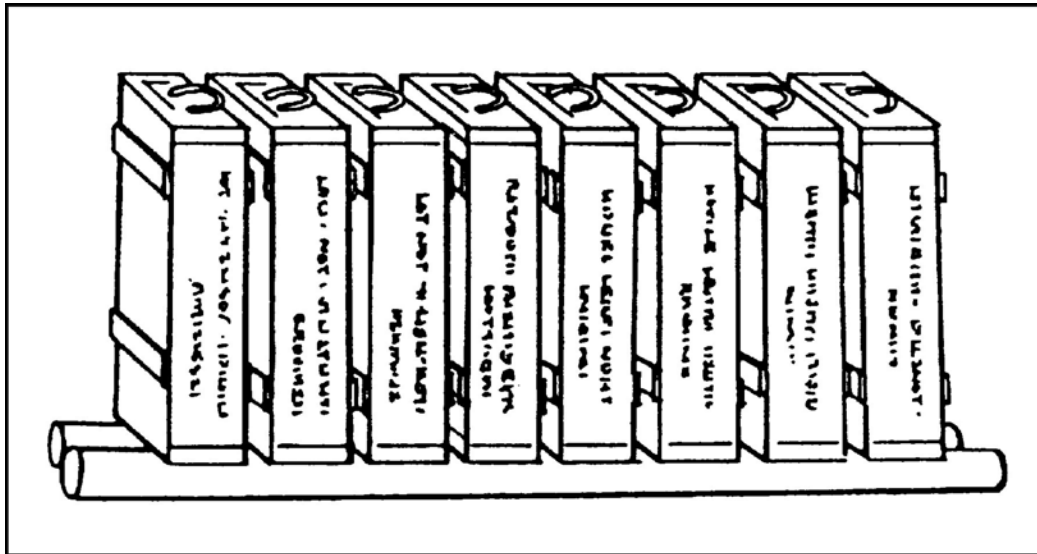


Figure 2. Storage of WP Ammunition

- c. Firebreaks of sufficient width to prevent the spread of fire should be cleared and maintained. Since firebreaks around ammunition stacks are easily detected by aerial reconnaissance, restrictions in their use must be considered.
4. Storage of ammunition on mortar carrier.
 - a. When storing ammunition on the M106A2 carrier, personnel will store HE ammunition in the horizontal racks on the right side of the carrier. The ammunition is stored in its fiber containers with seals unbroken. A small amount of HE ammunition with the seals broken should be stored in the vertical ready rack on the left side of the carrier. This ammunition is prepared and ready for immediate firing.
 - b. All WP ammunition carried is stored in the ready rack, FUZE UP, in its fiber containers with seals unbroken. Should the tactical situation require the carrying of more WP than can be stored in the vertical rack, personnel will still store the ammunition vertically in the carrier.
 - c. Personnel will manage and store illumination ammunition the same as HE ammunition.
 5. Storage of ammunition in extreme environments.
 - a. Desert storage. Cover rarely exists in the desert. Isolated cover is conspicuous and invites special attention from enemy reconnaissance. Therefore, trees or brush should not be used as a storage site. Shadows and regularly shaped patterns are conspicuous and must be avoided by the use of small, irregular lines and rows. Low, irregular stacks covered by brush or stone, or garnished to resemble bushes must be used. In the desert, dispersion of ammunition is extremely important.
 - b. Cold climate storage. Ammunition stacks in the open in cold climates must be kept off the ground by the use of heavy dunnage. This prevents stacks from sinking in the softened ground after a thaw, and it allows surface water to flow under or around stacks without touching the ammunition. Stacks should be covered to keep out snow and water, but they must be ventilated to reduce condensation, which would cause the boxes to freeze together.
 - c. Tropics storage. The terrain and climate in the tropics make the selection of storage sites for ammunition especially important. Heavy rains may convert level, firm ground into a sea of mud. Rain followed by intense sunlight produces conditions of heat and humidity, which accelerate the deterioration of ammunition and packing materials. The squad leader must be alert for

Performance Steps

termites. Termites can eat through dunnage, ammunition boxes, and fiber containers, causing deterioration of ammunition, packing, and dunnage.

Evaluation Preparation: Setup: Test this task during a live-fire exercise. Given all equipment, personnel, ammunition, and information normally associated with live fire.

Brief Soldier: Tell the Soldier that he is to be tested on picking an ammunition storage site and preparing the site. He is also required to supervise the correct loading of ammunition on the mortar carrier.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Select storage area that meets as closely as possible the ammunition storage area requirements.	—	—
2. Supervise the proper preparation of the storage site.	—	—
3. Supervise the storage of ammunition to include separation by type and lot number, and proper stacking.	—	—
4. Supervise the proper storage of ammunition on the mortar carrier.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 4-30.13
FM 5-250

Place a 60-mm Mortar into Action While in the Handheld Mode
071-323-4101

Conditions: As a gunner on a 60-mm mortar, given a 60-mm mortar complete with sight, baseplate, baseplate stake, directional stake, and two personnel to act as assistant gunner and ammunition bearer. Each member of the mortar crew will perform this task acting as the gunner.

Standards: Mount the mortar within 75 seconds in accordance with the performance measures below.

Performance Steps

1. Position the baseplate.
2. Lock the barrel to the baseplate.
3. Attach the bipod assembly to the barrel.
4. Attach the sight to the bipod.
5. Lay on the aiming point.
6. Position the baseplate.
7. Connect the barrel to the baseplate.
8. Orient/support the barrel from a firing position.

Evaluation Preparation: Setup: At the test site provide all materials and equipment according to the task condition statement.

Brief Soldier: Tell the Soldier to lay the weapon on a pre-designated aiming point in the handheld mold.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Identified the function of mortar components.	_____	_____
2. Obtained a sight picture.	_____	_____
3. Leveled and cross-leveled a mortar.	_____	_____
4. Performed small and large deflection and elevation changes.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
 FM 23-91

Perform Safety Checks on a 60-mm Mortar
071-323-4104

Conditions: As the gunner on a 60-mm mortar, given a mounted 60-mm mortar complete with sight.

Standards: Perform the mortar safety checks to ensure that the mortar is safe to fire.

Performance Steps

1. Check for mask and overhead clearance.
 - a. To determine mask clearance, lower the barrel to 800 mils elevation and sight along the top of the barrel with the eye placed near the baseplate.
 - b. To determine overhead clearance, raise the barrel to 1500 mils elevation and sight along the top of the barrel with the eye near the baseplate.

NOTE: If the full range of elevation cannot be obtained throughout the entire sector of fire, raise or lower the barrel until rounds clear the obstruction, turn the elevation knob on the sight until elevation bubble is level, read the elevation, and report it to the fire direction center (FDC).

2. Make sure the barrel is locked to the baseplate, the open end of the socket cap points in the direction of fire, and the handle assembly is up.
3. Check the yoke coupling.
 - a. The coupling knob is seated and hand-tight.
 - b. The coupling is properly seated in the appropriate saddle.
 - (1) Low saddle for elevation: 1101 to 1511 mils.
 - (2) High saddle for elevation: 800 to 1100 mils.
4. Check that the spread cable is not tangled and is taut between the legs.
5. Check that the locking nut on the bipod leg is hand-tight.
6. Check that the SELECTOR switch is on drop-fire.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to use the equipment and information provided and to perform safety checks on a 60-mm mortar.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Checked mask and overhead clearance.	_____	_____
2. Checked that the barrel was locked to the baseplate.	_____	_____
3. Checked that the yoke coupling knob was tight.	_____	_____
4. Checked that the spread cable was taut between the legs.	_____	_____
5. Checked that the locking nut on bipod was tight.	_____	_____
6. Check that the SELECTOR switch is on drop-fire.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

STP 31-18B34-SM-TG

**References
Required**

Related
TM 9-1010-223-10

Prepare 60-mm Mortar Ammunition for Firing
071-323-4106

Conditions: As the ammunition bearer, given any of the following rounds: M720 with fuze M734 (multi-option), M888, M49A4, M302A1, and M83A3; type of round, charge, and fuze setting will be given in the form of an initial fire command.

Standards: Within 1 minute after the fire direction center (FDC) gives the initial fire command, select the correct round, and set the fuze (when applicable) and charge for the fire command given.

Performance Steps

- 1. Identification of rounds.
 - a. Mortar ammunition is painted and marked with a color code to help identify it. Some older stocks were painted to conform with the old US color code, which is no longer used.

TYPE ROUND	NATO COLOR CODE (NEW)			US COLOR CODE (OLD)		
	Round	Markings	Bands	Round	Markings	Bands
High Explosive (HE), M720, M49, M888	Olive Drab	Yellow	Yellow	Olive Drab	Yellow	Yellow
Smoke (WP) M302	Light Green	Red	Yellow	Gray	Yellow	Yellow
Illuminating (Illum) M83	White	Black	NA	Gray	White	NA
Training Practice (TP) M50	Blue	White	NA	Blue	White	NA

Figure 1. Ammunition and Color Codes for 60-mm Mortars

- b. Since the ammunition used with M19 60-mm mortar can be fired from the lightweight company mortar (LWCM), crew members must be able to identify rounds by shape as well as by the old and new (North Atlantic Treaty Organization [NATO]) color codes. Each round is stenciled with the type and mode of round—for example, M720 HE; M49 HE; M888 HE; M302 WP; Illum (Figures 1 and 2).

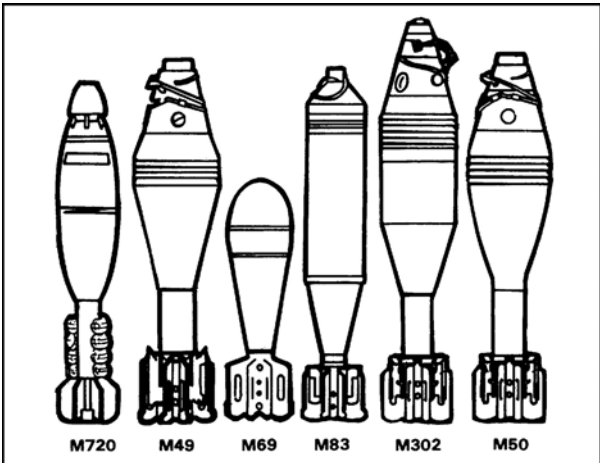


Figure 2. Ammunition for 60-mm Mortar

Performance Steps

CAUTION: When firing the M720 or the M888 round from the M19 mortar, DO NOT fire above a charge 2.

- c. The only rounds specifically developed for the LWCM are the M720 HE round with the multioption fuze, and the M888 HE round with a delay superquick (SQ) fuze.
- d. When ammunition designated for the M19 60-mm mortar is fired from the LWCM, greater ranges are achieved than shown in the firing tables because the LWCM barrel is longer than the M19 mortar.

2. Fuze setting.

a. M525 fuzes:

- (1) These fuzes are SQ type only, and are designed to function before any penetration occurs.

CAUTION: If upon removal of the safety wire, a buzzing sound in the fuze is heard, or the bore-riding safety pin comes out of the fuze, the round should not be used. There is a possibility that the fuze is armed.

- (2) To prepare the M49 round fuzed with the M525 fuze, the ammunition bearer has only to remove the safety wires.

- (3) The M525 fuze will not arm for a minimum of 3 seconds after firing.

b. The M527 fuze functions and has safety wires the same as the M525 fuze.

c. M734 multioption fuze (Figure 3):

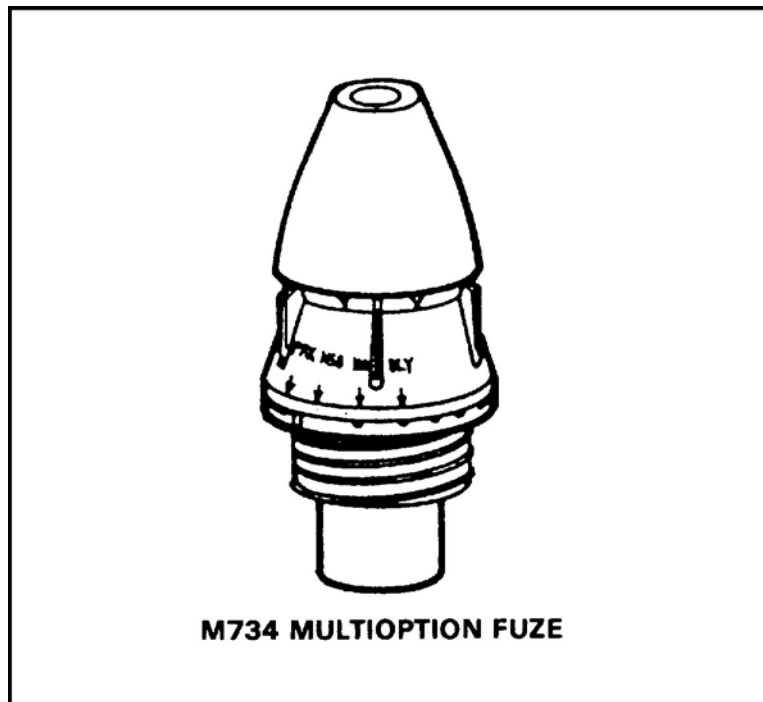


Figure 3. M734 Multioption Fuze

- (1) The multioption fuze for the M720 HE round can be set to function in each of four different modes:

Performance Steps

Table 1. M720 HE Round Fuze Modes

MODE	THE ROUND BURSTS
Proximity (PROX)	1 to 4 meters above the target. If a round set for PROX fails to burst at the proximity height above the target, it will automatically burst 1 meter (NS) above the target.
NEAR-surface (NS)	0 to 1 meter above the target. If a round set for NS fails to burst at the NS distance above the target, it will automatically burst on impact.
Impact (IMP)	On impact. If a round set for IMP fails to burst on impact, it will automatically burst 1/20 of a second after impact (DLY).
Delay (DLY)	1/20 of a second after impact.

- (2) The fuze can be set to any of the four modes by turning the nose cone to align the index mark with the mode required (no tools are needed to set the fuze). The setting can be changed any number of times without damage to the fuze action.
 - (3) The fuze has no safety pins or wires to remove and is bore-safe. As the round leaves the barrel, air is funneled through a hole in the nose cone, spinning a small propeller that must turn many revolutions to arm the fuze.
3. The M302 smoke (WP) round is used as a screening, signaling, casualty-producing, or incendiary agent. The round has a casualty-producing radius of 10 meters.
4. The M83 illum round is used in night missions to assist in observation. The M83 round is equipped with the M65 time fuze. The round has a fixed time of flight (time cannot be set) of about 14.5 seconds. The M83A3 burns for at least 25 seconds with a minimum of 330,000 candle power; the M83A1 burns with a minimum of 145,000 candle power.
5. The M49 HE round is used chiefly against personnel. It has a bursting area about 18 meters wide and 9 meters deep.
6. Setting charges.
 - a. M720HE:
 - (1) The M720 HE round is packed with four horseshoe charges and the ignition cartridge.
 - (2) In setting the charge on the round, the horseshoe charges are removed until the charge given in the fire command remains on the round (for example, charge two, remove two charges, leaving two charges on the round). The ignition cartridge is not counted as a charge. When firing charge zero, all charges are removed and the round is fired using only the ignition cartridge.
 - b. M49 HE; M302 Smoke (WP); M83 illum:
 - (1) These rounds come equipped with four sheet charges in cellophane bags. These charges are between the tail fins of the rounds and are secured in place by wire clips.
 - (2) In setting the charge on these rounds, lift the wire clip and remove the charge. In setting charges, ensure that charges are not removed from the same side of the round—for example, in setting charge two, remove charges on opposite sides of the tail fins. The ignition cartridge is not counted as part of the charge. When firing charge zero, all charges are removed, and the round is fired using only the ignition cartridge.
7. All rounds and fuzes should be inspected for serviceability before firing.

Evaluation Preparation: Setup: Test on a live-fire range, providing all equipment and information given in the task condition statement.

STP 31-18B34-SM-TG

Brief Soldier: Tell the Soldier to use the equipment and information provided and to prepare the 60-mm mortar ammunition for firing.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Identify all types of rounds.	_____	_____
2. Place the correct charge on the round.	_____	_____
3. Set the correct time setting on the fuzes.	_____	_____
4. Remove the safety wire.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 9-1010-223-10

Subject Area 8: LAY A 60-MM OR 81-MM MORTAR

Engage Targets With a 60-mm, 81-mm, or 120-mm Mortar Using Direct Lay
071-074-0004

Conditions: Given a ground mounted 60-mm or 81-mm mortar complete, a target within minimum and maximum range of the mortar and in sight of the gunner when the mortar is placed into action, an assistant gunner, and sufficient ammunition to adjust to, and destroy the target.

Standards: The target is disabled or destroyed using the least resources. The most appropriate method of engagement to obtain maximum effect is employed. The appropriate ammunition for the type of target is selected.

Performance Steps

1. Refer the mortar sight.
2. Center the traverse bearing.
3. Place elevation data on the mortar sight.
4. Level the mortar (approximate level).
5. Shift the mortar (if necessary).

The mortar will require shifting unless the target is within two turns of traverse after the above steps have been completed. If the target is within two turns of traverse, the mortar may be traversed onto the target to obtain the lay described in step "6". If the mortar is traversed to the target, step "5" will be bypassed.

6. Lay the mortar on the target
7. Give the command "FIRE" - or - inform the squad leader that the mortar is "UP".
8. Observe the burst of the round

NOTE: If a first round hit is obtained, "fire-for-effect" can be fired immediately. If the first round misses the target, rounds must be adjusted following steps "9" through "13".

9. Level and cross level the mortar.
 10. Refer the sight to the point of impact.
- NOTE: If the round is determined to be "over" or "short," the squad leader will issue a command to elevate or depress the barrel (e.g., UP, ONE TURN).

11. Elevate/depress the barrel.
12. Relay the mortar on the target.

13. Fire the mortar (as described in "7" above).

NOTE: The process described in 8, 9, 10, 11, 12, and 13 above is repeated until the target is hit, at which time the squad leader may end the mission or "fire-for-effect" if deemed appropriate.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier when firing using trigger fire, the baseplate must be dug in and seated as much as possible before firing the first round. When firing trigger fire, the gunner must release the trigger after a round is fired.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Referred to the mortar sight.	_____	_____
2. Centered the traverse bearing.	_____	_____
3. Placed elevation data on the mortar sight.	_____	_____
4. Leveled the mortar.	_____	_____
5. Shifted the mortar.	_____	_____
6. Laid the mortar on the target.	_____	_____
7. Gave the command "FIRE" - OR - Informed the squad leader that the mortar is "UP."	_____	_____
8. Observed the burst of the round.	_____	_____
9. Leveled and cross leveled the mortar.	_____	_____
10. Referred the sight to the point of impact.	_____	_____
11. Elevated/depressed the barrel.	_____	_____
12. Relayed the mortar on the target.	_____	_____
13. Fired the mortar.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-90
FM 23-91
TM 9-1015-250-10

Refer and Realign Aiming Post
071-074-0005

Conditions: Given a laid mortar, the sight of which has been referred to a given deflection; assistant(s) skilled at aiming post emplacement and with sufficient aiming posts to suit the terrain; with or without aiming post lights; and the requirement to emplace/move aiming posts.

Standards: Both posts were placed at the required distance from the mortar (as terrain permitted, or as instructed by the squad/section leader). When viewed through the mortar sight set on the referred deflection, both posts were aligned along the left edge of the sight vertical hairline.

Performance Steps

1. Recheck the lay of the mortar.
2. Dispatch the assistant with the aiming posts.
NOTE: The assistant should move approximately 50 meters along the mortar line of sight, drop the near post, continue for another 50 meters (total 100) and turn, facing the gunner—awaiting signals (see Night/Limited Visibility, below).
3. Align the bottom of the far aiming post.
4. Have the assistant emplace the post.
5. Remove cant from the aiming post.
6. Signal proper emplacement.
NOTE: The assistant will move to the near post and prepare to repeat the process, using the near post.

7. Repeat the process in steps 3,4,5, and 6 for the near post.
NOTES:
1. NIGHT/LIMITED VISIBILITY: At night, the post light would be turned on/flushed, or other prearranged signal would be used to let the gunner know that the assistant was ready to begin adjustments. The assistant would attempt to hold the post vertical, and the gunner would determine when to place the post into the ground by aligning the light with the sight vertical hairline, as the bottom of the post may not be visible. The canting (final adjustment) process will be the same.
2. HARD TERRAIN: In the event the assistant(s) must brace the aiming posts, the same process must be followed; however, the surface may not allow penetration of the post. In such cases, the assistant(s) may have to attempt to secure and align the post simultaneously.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier that, using the equipment and information provided, he must refer and realign aiming post using the distant-aiming-point method or the sight-box method.

Performance Measures	GO	NO GO
1. Rechecked the lay of the mortar.	—	—
2. Dispatched the assistant with the aiming posts.	—	—
3. Aligned the bottom of the far aiming post.	—	—
4. The assistant emplaced the post.	—	—
5. Removed cant from the aiming post.	—	—
6. Signaled proper emplacement.	—	—

Performance Measures

GO **NO GO**

7. Repeated the process in steps 3,4,5,and 6 for the near post.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-90

FM 23-91

Manipulate a 60-mm, 81-mm, or 120-mm Mortar for Traversing and/or Searching Fire
071-074-0006

Conditions: Given a laid 60-mm or 81-mm mortar, commands for a traversing and/or searching fire mission, and ammunition required by the fire command.

Standards: Command data is applied to the sight; the mortar is relaid prior to firing; the required number of rounds are fired; the required number of turns of traverse/elevation are applied in the specified direction between rounds; and all fire commands are executed.

Performance Steps

1. Gunner prepares the mortar for traverse.

NOTE: At this point, the fire direction center (FDC)/squad leader will issue subsequent fire commands.

2. Gunner re-lays the mortar.

NOTE: From this point the FDC will determine the method of fire. The squad leader may be delegated the authority to fire; which may, in turn, be delegated to the gunner.

3. Fire the first round.

4. Traverse the mortar to the second round position.

5. Fire the second round.

NOTE: If additional rounds are required by the fire command, follow step 6 below.

6. Complete the mission using the process described in steps 4 and 5 above.

SEARCHING FIRE

NOTE: The gunner follows the same process as described for traversing fire (above), substituting step 7 (below) for step 4 (above).

7. Elevate or depress the mortar to the subsequent round position.

SIMULTANEOUS TRAVERSING AND SEARCHING FIRE

NOTE: The same process is followed for traversing and searching fire as that outlined for traversing fire (above), substituting step 8 (below) for step 4 (above).

8. Traverse the mortar to the second round position.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to use the equipment and information provided and manipulate a mortar for traversing and/or searching fire.

Performance Measures

1. Gunner prepared the mortar for traverse.

GO **NO GO**

2. Gunner re-laid the mortar.

3. Fired the first round.

4. Traversed the mortar to the second round position.

5. Fired the second round.

6. Completed the mission using the process described in steps 4 and 5 above.

Performance Measures

GO **NO GO**

7. Elevated or depressed the mortar to the subsequent round position.

8. Traversed the mortar to the second round position.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-90

FM 23-91

TM 9-1015-249-10

TM 9-1015-250-10

Reciprocally Lay an 81-mm Mortar Using an M2 Aiming Circle

071-074-0007

Conditions: Given a declinated aiming circle prepared for operation (oriented to magnetic north); a mounted mortar, with crew and calibrated sights; a mounting azimuth; with or without a surveyed orienting line.

Standards: The 0-3200 line of the mortar sight was brought to within one mil of parallel of the 0-3200 line of the aiming circle.

Performance Steps

1. Orient the aiming circle parallel to the mounting azimuth.

NOTE: At this point, the aiming circle has been declinated located in the position to lay the section (or mortar), and 0-3200 line oriented to magnet north.

- a. Parallel to a grid azimuth.

- (1) Check set-up and level of the aiming circle.
- (2) Determine the difference between the declination constant and grid azimuth (use following formula).
Declination Constant + 6400 mils (if the grid azimuth is larger than the declination constant) ----- = Factor - Grid Azimuth ----- = Difference between declination constant and grid azimuth.
- (3) Apply the difference to the micrometer scale using the upper (recording) motion.
- (4) Reorient to magnetic north using the lower motion.
- (5) DO NOT disturb the lower motion until lay is complete, as the 0-3200 line is now oriented to the mounting azimuth.

- b. Parallel to a magnetic azimuth.

- (1) Check the orientation and level of the aiming circle.
- (2) Subtract the mounting azimuth from 6400.
- (3) Place the remainder on the micrometer scale using the upper (recording) motion.
- (4) Reorient to magnetic north using the lower motion.
- (5) DO NOT disturb the lower motion until lay is complete, as the 0-3200 line is now oriented to the mounting azimuth.

NOTE: For the following step, the section leader disregards the north orientation given in the task standard (para 1c). The orienting line method precludes all magnetic errors associated with declination and preparation for operation. At this point, the aiming circle has been located in position to lay the section (or mortar).

- c. Parallel to an orienting line.

- (1) Check the orientation and lay of the aiming circle.

NOTE: If the mounting azimuth is the same as the orienting line azimuth, disregard steps 2 and 3. If there is a difference between the mounting azimuth and the orienting line azimuth, include steps 2 and 3.

- (2) Subtract the lay azimuth from the orienting line azimuth.
- (3) Apply the difference to the deflection micrometer (moving the sight in a clockwise direction) using the upper motion.
- (4) Using the lower motion, rotate the instrument until a sight picture is obtained on the far end of the orienting line.
- (5) The 0-3200 line of the aiming circle is now oriented to the mounting azimuth.

2. Have gunner sight on the aiming circle.
3. Sight on the mortar sight lens.
4. Read/announce the aiming circle deflection to the mortar.
5. Have the gunner lay on the aiming circle.
6. Complete the lay.

Performance Steps

7. Use a referred deflection.

Evaluation Preparation: Setup: At the test site (a declination station), provided the Soldier with all equipment and information as stated in the task condition statement, and paper and pencil.

Brief Soldier: Tell the Soldier to set up the aiming circle and place it over the declination point using the plumb bob. Then, using the known azimuths to the azimuth marks, determine the declination for the aiming circle.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Oriented the aiming circle parallel to the mounting azimuth.	_____	_____
2. Have gunner sight on the aiming circle.	_____	_____
3. Sight on the mortar sight lens.	_____	_____
4. Read/announced the aiming circle deflection to the mortar.	_____	_____
5. Have the gunner lay on the aiming circle.	_____	_____
6. Completed the lay.	_____	_____
7. Use a referred deflection.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References Required

Related
FM 23-91
TM 9-1290-262-10

Emplace Aiming Posts
071-074-0008

Conditions: Given a laid mortar in a mortar position, gunner who knows aiming post hand and arm signals, aiming posts, aiming post lights, and the requirement to emplace (or adjust) aiming posts.

Standards: The aiming post was placed in the position and at the attitude indicated by the gunner.

Performance Steps

- 1. Inspect/prepare aiming posts.
 - a. Posts were determined to be straight and in otherwise serviceable condition.
 - b. If posts were to be joined, they joined forming a single straight post.
 - c. If using lights, the light attached to the post, and functioned as designed.
 - d. Unserviceable posts or lights were repaired, replaced, and/or reported.
- 2. Determine the general location to be used.
 - a. Post locations were selected 100 meters and 50 meters away from the mortar, along the sight line.
 - b. If conditions required closer emplacement, maximum distance attainable was selected.
 - c. Maximum safe movement speed was attained
- 3. Align an aiming post.
- 4. Secure an aiming post.

NOTE: Once the post is emplaced, the Soldier must observe the gunner to ensure that re-adjustment is not necessary. Multiple readjustments may be required, which consist of repeating steps 3 and 4, above. The process is repeated until the gunner is satisfied with the emplacement.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to emplace aiming posts.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Inspected/prepared aiming posts.	_____	_____
2. Determined the general location to be used	_____	_____
3. Aligned an aiming post.	_____	_____
4. Secured an aiming post.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-90
FM 23-91

Adjust Mortar Fire Using Direct Alignment

071-074-0036

Conditions: Acting as the forward observer (FO) or squad leader for the mortar crew, firing without a fire direction center (FDC), given a mortar complete with crew, a known point, an identifiable target, and a designated observation post (OP) position. (The OP position must be within 100 meters of the mortar position or within 100 meters of the gun-to-target [G-T] line.)

Standards: Achieve effect on target within five adjustments. The round must land within 50 meters of an area target or 25 meters of a point target to achieve effect on a target.

Performance Steps

NOTE: When employing the mortar in the direct-alignment role, the squad leader may have to use the ammunition bearer due to the lack of communications equipment within the squad.

1. Under certain conditions, such as communications failure, lack of equipment, and so on, it may be impossible to use an FDC. In fire without an FDC, the FO/squad leader makes corrections differently than when operating with an FDC. He makes all his deviation corrections with respect to the gun-target (G-T) line, rather than with respect to the observer target (OT) line. All deviation corrections are sent in mils or turns of the traversing handwheel.
2. Forward observer within 100 meters of the mortar position.
 - a. When using direct alignment, the best position for the FO/squad leader is within 100 meters of the mortar. This means the FO/squad leader can be in front, behind, or to either side of the mortar, as long as his position is not more than 100 meters from it.
 - b. When the FO/squad leader is within 100 meters of the mortar position, he sends all deviation corrections to the gunner as determined without converting them in any way.
 - c. Since the FO/squad leader has no binoculars, he must use the finger-hand method to determine how many mils a round is to the left or right of the target to make the required corrections (Figure 1).

EXAMPLE: The first round has been fired. The FO/squad leader determines the round landed two fingers (70 mils) to the left of the target. The FO/squad leader's correction to the gunner would be: RIGHT 70. The gunner applies this correction to the previous deflection setting using the left add, right subtract (LARS) rule.

[Previous setting: 3200 mils, Correction: R70;

3200 mils - 70 = NEW SETTING: 3130 mils]

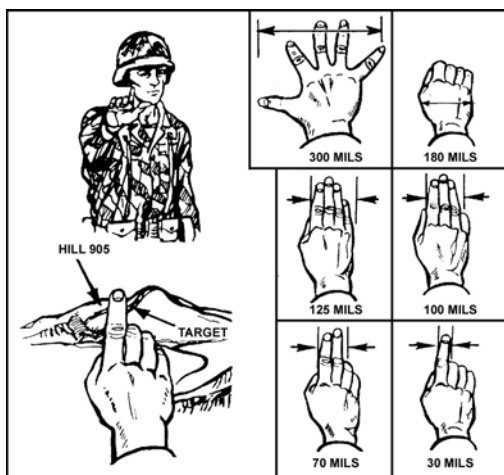


Figure 1. Finger-Hand Mil Relation

Performance Steps

- d. After determining the new deflection setting, the gunner indexes the new deflection on the sight, re-lays on the aiming point, and fires the next round.
 - e. If range corrections are required, the elevation for the new range can be sent by the FO/squad leader, or he can send the range for the next round. The gunner then determines the elevation and charge from the firing table for the range given.
3. Forward observer more than 100 meters from the mortar.
- a. When the FO/squad leader must position himself more than 100 meters from the mortar (either to the front or to the rear), he must stay within 100 meters of the G-T line. This may be almost impossible if the FO/squad leader is attacking targets over a wide frontage; he then has to move often to stay within 100 meters of the G-T line.
 - b. When the FO/squad leader is closer to the target by being in front of the mortar or is farther from the target by being behind the mortar, the corrections will be different, as seen from the FO/squad leader position.
- EXAMPLE: If the FO/squad leader is halfway between the mortar and the target, the correction is half of the spotting (Table 1).

However, if the mortar is halfway between the FO/squad leader and the target, the correction is twice the spotting (Table 2).

Table 1. Half of Spotting Distance

GUN-TARGET DISTANCE	FO TARGET DISTANCE	SPOTTING	CORRECTION
1,200 METERS	600 METERS	L50	L25

Table 2. Double of Spotting Distance

GUN-TARGET DISTANCE	FO TARGET DISTANCE	SPOTTING	CORRECTION
600 METERS	1,200 METERS	L50	R100

- c. Since the distance between the FO/squad leader, mortar, and the target differ, there is a simple formula to determine the needed corrections: OT distance over G-T distance.
- EXAMPLE: The OT distance is 1,000 meters, and the G-T distance is 1,200 meters. The spotting by the FO/squad leader is L60. To determine the correction to send to the gunner, the FO/squad leader determines the correction (Figure 2) as follows:
- $$OT/G-T = 1,000/1,200 = (5/6) \times 60 = 50\text{-mil deflection.}$$
- The correction sent to the gunner is R50.

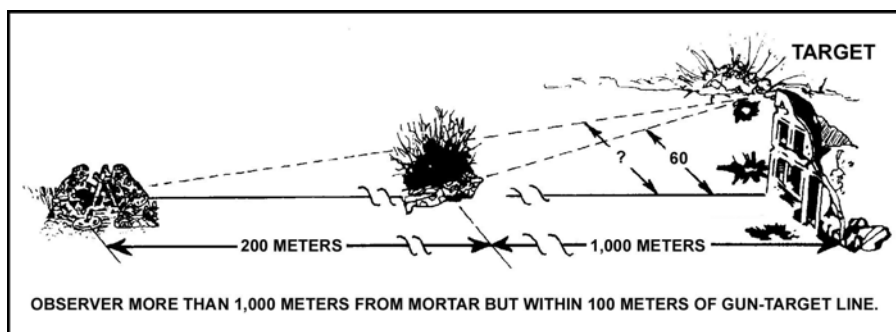


Figure 2. Range Correction

Performance Steps

4. Turns can also be used to adjust for range as an alternate method. (EXAMPLE: the round lands over the target—the gunner searches up eight turns; the next round lands short of the target—the gunner searches down four turns to bracket the target. He continues splitting the bracket until the target is hit.)

Evaluation Preparation: Setup: Provide all equipment, material, situations, and personnel given in the task conditions statement.

Brief Soldier: Identify the forward observer's/squad leader's position, and tell the Soldier that he is to determine the corrections needed to engage the target indicated and to relay these corrections to the mortar crew to engage the target.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Define the limits for the FO/squad leader position.	_____	_____
2. Demonstrate proper finger-hand mil relation.	_____	_____
3. Determine deviation correction for mortar.	_____	_____
4. Determine range correction for mortar.	_____	_____
5. Engage target within 5 or less rounds.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required

Related

FM 7-90

Fire a Mortar

071-074-0037

Conditions: Given a 60-mm, 81-mm, 4.2-inch, or 120-mm mortar mounted, fire command, and fuzed ammunition in all conditions.

Standards: Safely and quickly fire a specified number and type rounds as dictated by the fire command.

Performance Steps

1. The gunner assumes a correct firing position.
 - a. Upon the command, FIRE MISSION, assume the assistant gunner's position on the right side of the mortar.
 - b. Stand about even with the muzzle of the mortar barrel, facing to the rear.
2. The assistant gunner loads the mortar.
 - a. Upon the command, HANG IT, turn at the waist to the left and accept the round from the ammunition bearer.

NOTE: With the 60-mm mortar, there is no ammunition bearer. Therefore, the assistant gunner must secure the round from the stockpile himself.

- b. (The ammunition bearer should hold the round with the fuze pointing to the rear.) Accept the round from the ammunition bearer with the right hand under the round and the left hand on top of the round.
- c. Turn at the waist to the right while lifting the round to the height of the muzzle of the barrel.
- d. Guide the round into the barrel until the body/shoulder of the round is within the barrel (Figure 1).



Figure 1. Assistant Gunner Inserting the Round

- e. When loading the 4.2-inch, M329A2 high explosive (HE) round, the engraved rotating band (Figure 2) must engage the lands and grooves of the barrel. To do this, insert the round until the engraved band reaches the lands and grooves. Rotate the round to the right (clockwise) until the engraved band engages the lands and grooves. Continue to turn the round clockwise while lowering the round until the shoulder of the round is in the barrel. This procedure is called indexing the round.

Performance Steps

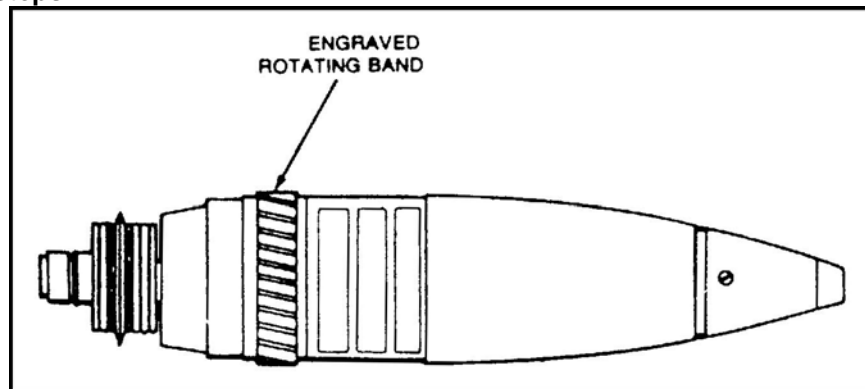


Figure 2. M329A2 HE Round

- f. Once the round is inserted into the barrel the proper distance, the assistant gunner shouts back, "Hanging."
3. The assistant gunner fires the round.
 - a. Upon the command, FIRE—

WARNING: If the round fails to slide down the barrel—DO NOT force it.

 - (1) Release grip on the round, and allow it to slide through the hands and down the barrel.
 - (2) After releasing the round, pass hands downward along the barrel while bending at the waist.

WARNING: Keep the head below the muzzle until the round fires to avoid the muzzle blast.

 - (3) When bending at the waist to lower the head below the muzzle, turn away from the mortar.
 - (4) In this position, the assistant gunner is ready to accept the next round to fire.
 - b. After the number of rounds given in the fire command have been fired, the assistant gunner shouts the number of rounds fired—for example, "Number two, ten rounds completed."

Evaluation Preparation: Setup: At the test site, provide all equipment, materials, and commands given in the task conditions statement.

NOTE: Task can be tested during a live-fire exercise or when using practice ammunition.

Brief Soldier: Tell the Soldier that he is to assume the correct position of the assistant gunner, correctly fire the rounds given in the fire command, and use correct terminology.

Performance Measures

1. Assume the proper assistant gunner's position.
2. Correctly accept a round from the ammunition bearer.
3. Correctly hang the round.
4. Correctly release the round and move into position to accept the next round.
5. Use correct terminology.

GO **NO GO**

—	—
—	—
—	—
—	—
—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required

Related

FM 7-90

Reciprocally Lay a Mortar Using a Laid Mortar
071-074-0038

Conditions: Given a mortar laid for direction (any method), an additional mounted mortar with crew and calibrated sights, a mounting azimuth, and a referred deflection.

Standards: The 0-3200 line of the second mortar sight was brought to within one mil of parallel of the 0-3200 line of the sight of the mortar used for laying.

Performance Steps

NOTE: For this task, the #2 mortar (gun) has been laid, and the #1 gun is to be reciprocally laid (#2 normally being the base gun). The section leader is positioned at the #2 gun and will use its sight for the lay.

1. Have the #1 gunner sight on the #2 gun sight.
 - a. The correct command was issued, to which the gunner responded and announced, "Aiming point identified." The section leader observed the actions of the crew and made corrections as necessary.
2. Determine the first deflection for the #1 gun.
 - a. The back azimuth of the sight reading taken on the #1 gun's sight lens was determined.
3. Have the #1 gunner apply the deflection and lay on the #2 gun sight.
 - a. The deflection determined in step C was formatted into the correct command and issued to the #1 gunner. The section leader observed the actions of the crew and made corrections as necessary.
4. Determine subsequent deflection for the #1 gun.
 - a. The back azimuth of the sight reading taken on the #1 gun's sight lens was determined.
5. Have the #1 gunner apply the subsequent deflection and re-lay on the #2 gun sight.
 - a. The deflection determined in step 4 was formatted into the correct command and issued to the #1 gunner. The section leader observed the actions of the crew and made corrections as necessary.
6. Complete the lay.
 - a. The process outlined in steps 2, 3, 4 and 5 were repeated until the #1 gunner announced, "No 1, zero mils (or one mil), mortar laid." The section leader confirmed the lay and made corrections as necessary.
7. Apply the referred deflection.
 - a. The section leader announced (or had the fire direction center (FDC) announce) the referred deflection along with the command to realign aiming posts. All information was formatted into the appropriate command. The section leader observed the actions of the crew(s) and made corrections as necessary.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to reciprocally lay a mortar using a laid mortar.

Performance Measures	GO	NO GO
1. Had the #1 gunner sight on the #2 gun sight.	—	—
2. Determined the first deflection for the #1 gun.	—	—
3. Had the #1 gunner apply the deflection and lay on the #2 gun.	—	—

Performance Measures

	<u>GO</u>	<u>NO GO</u>
4. Determined subsequent deflection for the #1 gun.	_____	_____
5. Had the #1 gunner apply the subsequent deflection and relay on the #2 gun sight.	_____	_____
6. Completed the lay.	_____	_____
7. Applied the referred deflection.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
FM 23-90
FM 23-91

Control the Expenditure of Mortar Ammunition
071-074-0040

Conditions: Given an inventory of ammunition; a call for fire; fire support plan including: priority of fires, final protective fire, and scheme of maneuver for the supported unit; and ammunition records.

Standards: Ammunition was expended to best support the mission of the supported unit.

Performance Steps

- 1. Assess the target.
 - a. The target was determined to have sufficient priority to warrant required ammunition expenditure, or rejected as not engageable, or referred to another support unit (direct or indirect fire).
- 2. Allocate ammunition.
 - a. The amount and type of ammunition allocated was based on the type and size of target, ammunition available, priority of the target, mission of the supported unit, and enemy situation.
- 3. Monitor expenditure.
 - a. The amount and type of ammunition allocated was fired or exceptions noted.
- 4. Update records.
 - a. An accurate inventory of ammunition was maintained.

Evaluation Preparation: Setup: This task is tested during a live-fire exercise; provide the Soldier with all equipment, personnel, ammunition, and information normally associated with a live fire.

Brief Soldier: Tell the Soldier he will be tested on controlling mortar ammunition.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Assessed the target.	_____	_____
2. Allocated ammunition.	_____	_____
3. Monitored expenditure.	_____	_____
4. Updated records.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-91
FM 7-90

Lay a Mortar Using Direct Alignment

071-074-0042

Conditions: As a mortar squad leader, given a mounted mortar in a defilade position, an aiming post or stake with crossarm (T-bar), an observable target, and a gun crew.

Standards: Align the mortar, the aiming post or stake, and the target.

Performance Steps

NOTE: The information and procedures given in this task apply to the 60-mm, 81-mm, and 120-mm mortar. Direct alignment is the most often used method when employing mortars without a fire direction center (FDC).

1. Direct-alignment method.
 - a. When using the direct-alignment method, the squad leader acts as the forward observer (FO) for the squad.
 - b. To use the direct-alignment method, the squad leader must select a target within his area of responsibility and a position for the mortar that can be seen from his FO position (Figure 1).

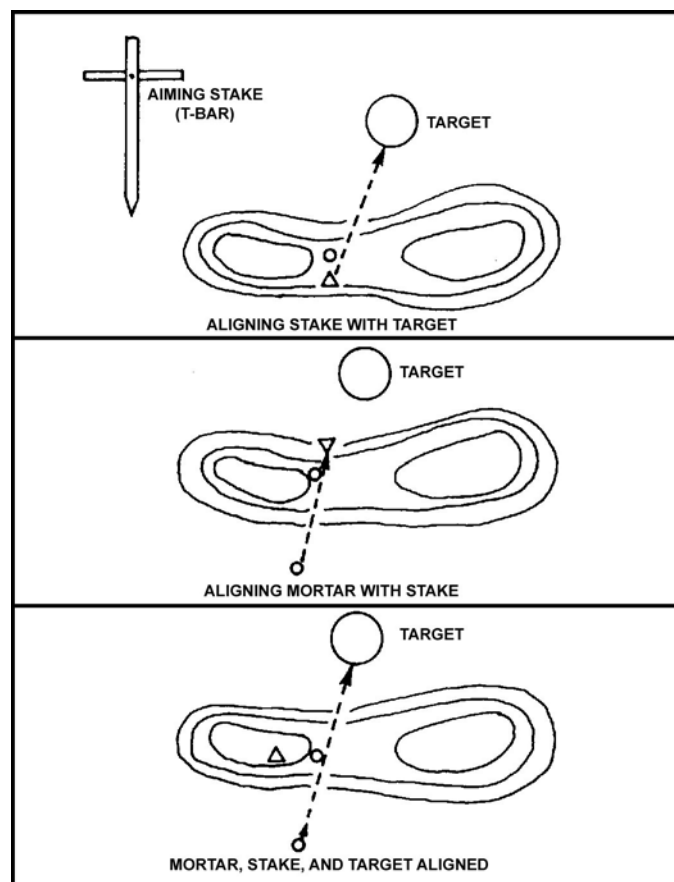


Figure 1. Direct-Alignment Method

- c. After selecting the approximate position for the mortar, the squad leader moves to his FO position.

NOTE: In the direct-alignment method, the mortar must be in a defilade position. Also the FO/squad leader must be able to see both the target and the mortar from his position.

Performance Steps

- d. In aligning the mortar and the target, the squad leader can use an aiming post for the alignment point. However, the best and most accurate method is to use an aiming stake with a crossarm (T-bar) on it (Figure 1).

NOTE: Two narrow pieces of wood from an ammunition box nailed together to form a cross can serve as the aiming stake (T-bar).

- e. To align the target and the mortar, the squad leader moves to a point (FO position) where he can see the target (or reference point) and also see the mortar. He then positions the stake with the crossarm pointed at the target/reference point. Without disturbing the stake, he sights back along the crossarm and directs the positioning of the mortar, using arm-and-hand signals until the mortar is aligned with the crossarm.
- f. The gunner ensures that a deflection of 3200 mils (M64 or M53) is set on the sight, and that the vertical crossline of the sight is laid on the crossarm aiming stake.
- g. The target/reference point, aiming stake, and mortar are now aligned, and the mortar is ready to fire.

- 2. When registration or adjustment has been completed, aiming posts can be placed out on a referred deflection as in the normal procedure. All fire commands and subsequent corrections from the FO/squad leader are sent to the gunner, who sets them on the sight.

Evaluation Preparation: Setup: At the test site, provide all equipment, material, and personnel given in the task conditions statement.
Brief Soldier: Tell the Soldier that he is to select a target (show him his area of responsibility), emplace his aiming stake, and align the mortar onto the target.

Performance Measures	GO	NO GO
1. Select initial mortar position.	—	—
2. Select FO position.	—	—
3. Align aiming stake on target.	—	—
4. Align mortar.	—	—
5. Command mortar crew to lay on aiming stake.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required

Related

ARTEP 7-90-DRILL
FM 23-90
FM 7-90

Lay an 81-mm Mortar for Deflection and Elevation **071-086-0003**

Conditions: Given a mounted 81-mm mortar laid on aiming posts with a referred deflection of 2800 mils and elevation of 1100 mils; a fire command requiring a deflection and elevation change; and an assistant gunner.

Standards: The data contained in the fire command is placed on the sight; an aligned or compensated sight picture is attained; and the elevation and cross level vials are centered.

Performance Steps

NOTE: Elevation changes may be made in conjunction with large or small deflection changes and the gunner may use the deflection/elevation sequence, which provides the most speed and accuracy.

1. Perform an elevation change.
 - a. Place new data on the sight.
 - b. Level the elevation vial.
 - c. Check/correct the sight picture.
2. Perform a small deflection change.
 - a. Place new data on the sight.
 - b. Traverse to align sight hairline with aiming posts.
 - c. Check/correct elevation level.
 - d. Recheck/correct sight picture.
3. Perform a large deflection change.
 - a. Place new data on the sight.
 - b. Shift and traverse to align sight hairline with aiming posts.
 - c. Check/correct elevation level.
 - d. Recheck/correct sight picture.
4. Perform simultaneous deflection and elevation changes.
 - a. Place new data on the sight.
 - b. Elevate or depress barrel until approximate level is attained.
 - c. Shift and traverse to align sight hairline with aiming posts.
 - d. Check/correct elevation level.
 - e. Recheck/correct sight picture.

Evaluation Preparation: Setup: At the test site, provide a 81mm mortar with sight and aiming posts placed out on a referred deflection.

Brief Soldier: Tell the Soldier to use the equipment and information provided and lay a 81-mm mortar for deflection and elevation (D&E) with the aid of an assistant gunner and an ammunition bearer.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Performed an elevation change.	_____	_____
2. Performed a small deflection change.	_____	_____
3. Performed a large deflection change.	_____	_____
4. Performed simultaneous deflection and elevation changes.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
FM 23-91
TM 9-1015-249-10

Lay a Carrier-Mounted Mortar Using an M2 Compass

071-321-4007

Conditions: As a squad leader, given an M2 compass, mounting azimuth, squad members, and carrier-mounted mortar complete with sight, aiming posts, and compass stake.

Standards: Determine deflection to be placed on mortar sight to within 10 mils.

Performance Steps

NOTE: Laying mortars on a mounting azimuth with the M2 compass is not as accurate as the aiming-circle method, but it does allow the squad to quickly begin an adjustment on the target.

1. The squad leader places his compass on a steady object (compass stake) that is away from the carrier or any other metal object that could affect the compass needle. He uses the compass as an aiming point for the base mortar.
 - a. The squad leader directs squad members to move the carrier into position and to point the mortar in the direction of fire. The squad leader—
 - (1) Measures the grid azimuth to the base mortar.
 - (2) Subtracts the grid azimuth on which the mortar is to be laid from the grid azimuth to the mortar (adding 6400, if necessary).
 - (3) Announces the remainder of the grid azimuth as, "Deflection," (subtracting 3200, if necessary, when using the M34A2 sight) (Figure 1).

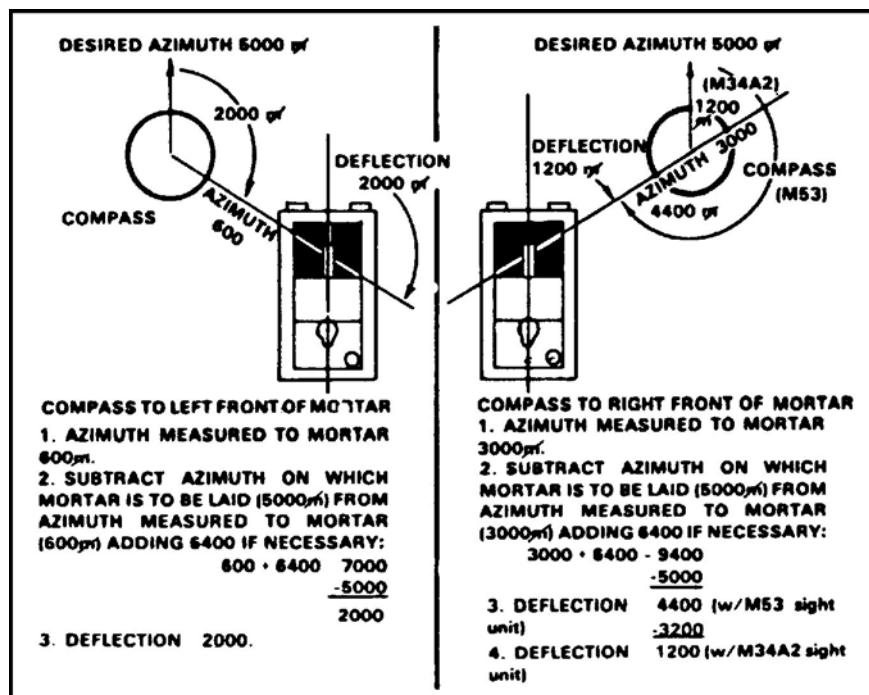


Figure 1. Determining Deflection

- b. The gunner sets the announced deflection on his sight and lays on the aiming point—the compass (Figure 1). He centers the traversing assembly slide, and then centers the mortar to the rear of the carrier. He directs the driver to pivot the carrier to obtain an approximate correct sight picture on the compass. With the assistant gunner, the gunner traverses and cross-levels the mortar until he obtains the correct picture on the compass. (The traversing mechanism must be within two turns of center traverse.) When using the M2 compass, only one lay is required. The mortar is now laid on the approximate grid azimuth.

Performance Steps

2. During the time required to lay the mortar, the gunner guides the ammunition handler in placing out the aiming posts.

NOTE: The carrier-mounted mortar section can be laid on the mounting azimuth using the compass-mil method by first laying the base mortar on the mounting azimuth using the same technique described above. Then, by using the mortar sight, the other mortars are reciprocally laid.

Evaluation Preparation: Setup: At the test site, provide all equipment, information, and personnel given in the task conditions statement.

Brief Soldier: Tell the Soldier that he is to determine the deflection to be placed on the mortar sight. The reading is then given to the gunner.

NOTE: The shifting of the carrier and laying of the sight on the compass are not be part of this test.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Place compass on compass stake so that compass is level.	_____	_____
2. Direct carrier to move into position with rear of carrier pointed in general direction of fire.	_____	_____
3. Determine grid azimuth to mortar.	_____	_____
4. Determine deflection to be placed on mortar sight to within 10 mils.	_____	_____
5. Announce the deflection to the gunner.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any steps are failed (F). If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References

Required

Related

TM 9-1290-333-15

Lay a Ground-Mounted Mortar Using an M2 Compass

071-321-4009

Conditions: As the squad leader, given an M2 compass with the declination constant indexed; a prescribed mounting azimuth; squad members; and mortar complete with sight, aiming posts, and baseplate stake.

Standards: Positioned baseplate stake where mortar is to be mounted, and aligned directional stakes to within 20 mils of the prescribed mounting azimuth.

Performance Steps

To quickly lay the section parallel, perform reciprocal laying using the M2 compass. Use this method only when an aiming circle is not available or when time dictates, since it is not as accurate as the other methods.

1. Before mounting the mortars, each squad leader puts a baseplate stake in the ground to mark the location of his mortar.
2. The section leader announces the desired mounting azimuth; for example, "Mount mortars, azimuth two two zero zero."
3. Each squad leader places his compass on the baseplate stake to mark the location of his mortar, and orients the compass on the mounting azimuth. He sights through the compass, and directs the second ammunition handler to align the aiming posts along the mounting (grid) azimuth.
4. Each mortar is mounted (baseplate is positioned to the baseplate stake as shown in the task on ground-mounting), and is laid on the aiming posts, with a deflection of 3200 mils set on the M53 sight (zero on the M34A2 sight). If no error exists, the mortars are now laid parallel; however, both mechanical and human error can easily occur.

NOTE: There are differences in compasses; therefore, the section sergeant may direct that all mortars be laid with one compass to avoid some error. It is also possible to lay the base mortar only as described, and then to lay the other mortars parallel using the mortar-sight method. In any event, use the compass method only when the aiming circle or mortar-sight method is not feasible.

Evaluation Preparation: Setup: At the test site, provide all equipment, personnel, and information given in the task condition statement. Provide an aiming circle to check the lay of the mortar. The grader provides the mounting azimuth.

Brief Soldier: Tell the Soldier to emplace his mortar using compass method of lay. Tell the Soldier that the aiming circle will be used to verify that the mortar is laid within 20 mils of the mounting azimuth.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Emplaced the baseplate stake.	—	—
2. Emplaced the compass on the baseplate stake.	—	—
3. Directed the emplacement of the directional stake.	—	—
4. Directed the mounting of the mortar.	—	—
a. Ensured baseplate is correctly positioned to the baseplate stake.		
b. Ensured vertical crossline of sight is within 2 mils of directional stake.		
c. Ensured traversing bearing is within two turns of center.		
d. Ensured mortar is laid within 20 mils of the mounting azimuth.		

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
TM 9-1290-333-15

Lay a 60-mm Mortar for Deflection and Elevation

071-323-4102

Conditions: As the gunner for a 60-mm mortar, given the following:

1. A mounted 60-mm mortar complete with sight set on 2800 mils deflection and 1100 mils elevation with bubbles level, aiming posts placed out on referred deflection of 2800 mils, and an assistant gunner.
2. A small deflection and elevation change of more than 20 but less than 60 mils deflection, and more than 35 but less than 90 mils for elevation.
3. A large deflection and elevation change of more than 200 but less than 300 mils for deflection, and more than 100 but less than 200 mils for elevation.

Standards: 1. Small deflection and elevation changes. Within 26 seconds, correctly set the mortar sight for deflection and elevation as given in the initial fire command, ensuring that both bubbles on the sight are level and the vertical crossline of the sight is within 2 mils of the left edge of the aiming posts.

2. Large deflection and elevation changes.

a. Without saddle change. Within 45 seconds, correctly set the mortar sight for deflection and elevation as given in the initial fire command, ensuring that both bubbles on the sight are level, the vertical crossline of the sight is no more than 2 mils off the compensated sight picture, and the traversing mechanism is not more than two turns to the left or right of the center position.

b. With saddle change. Within 60 seconds, move the bipod from the lower saddle and correctly set the mortar sight for deflection and elevation as given in the initial fire command. Ensure that both bubbles on the sight are level, the vertical crossline of the sight is no more than 2 mils off the compensated sight picture, and the traversing mechanism is not more than two turns to the left or right of the center position.

NOTE: Timing for each standard begins when the last number of the elevation is announced, and time stops when the gunner announces, "Up" or "Fire."

Performance Steps

1. Small deflection and elevation changes:

NOTE: With the mortar mounted and the sight installed, the sight is laid on the two aiming posts (placed out 50 and 100 meters from the mortar) on a referred deflection of 2800 mils and an elevation of 1100 mils. The mortar is within two turns of traverse. The vertical crossline of the sight is on the left edge of the aiming post.

- a. The gunner is given a deflection change in a fire command between 20 and 60 mils. The elevation change announced must be less than 90 mils and more than 35 mils.
- b. As soon as the sight data are announced, the gunner places it on the sight, lays the mortar for elevation, and traverses onto the aiming post by turning the traversing handwheel and the adjusting nut in the same direction.
- c. A one-quarter turn on the adjusting nut equals one turn of the traversing handwheel.
- d. When the gunner is satisfied with his sight picture (Figure 1) he announces, "UP."

Performance Steps

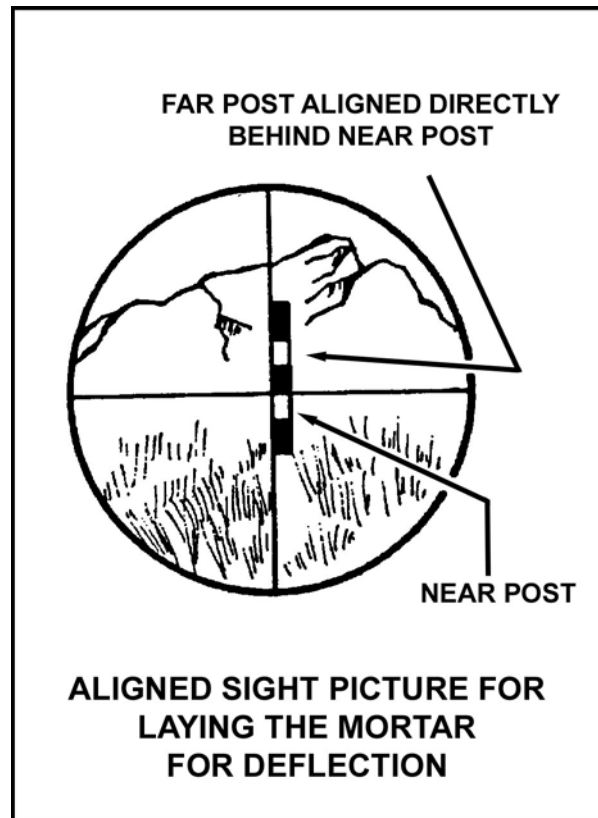


Figure 1. Sight Picture

NOTE: The gunner repeats all elements given in the fire command.

- e. After the gunner has announced "UP," the mortar should be checked by the squad leader to determine if the exercise was performed correctly.

2. Large deflection and elevation changes:

NOTE: With the mortar mounted and the sight installed, the sight is laid on the two aiming posts (placed out 50 and 100 meters from the mortar) on a referred deflection of 2800 mils and an elevation of 1100 mils.

- a. The gunner is given a deflection and elevation change in a fire command causing the gunner to shift the mortar between 200 and 300 mils and an elevation change between 100 and 200 mils.
- b. As soon as the sight data are announced, the gunner places it on the sight, elevates the mortar until the elevation bubble floats freely, and centers the traversing bearing. This ensures a maximum traversing capability after making the movement.
- c. With a saddle change:
 - (1) The gunner places the mortar into action with the bipod in the lower saddle, and he lays the sight on the aiming posts with a referred deflection of 2800 mils and an elevation of 1100 mils.
 - (2) The gunner is given a deflection and elevation change in the form of a complete initial fire command that causes the bipod to shift from the lower to upper saddle (when the bipod is in the upper saddle, the fire command causes it to move to the lower saddle).
 - (3) The gunner repeats each element of the fire command and places the deflection and elevation on the sight.
 - (4) The assistant gunner positions himself in front of the bipod in a kneeling position with one hand on the traversing handwheel and one on the dovetail.
 - (5) The gunner loosens the collar locking knob and opens the collar.
 - (6) The assistant gunner raises or lowers the bipod to the saddle, as required.

Performance Steps

- (7) The gunner relocks the collar.
- (8) The assistant gunner moves the legs of the bipod toward or away from the baseplate, as required, for the saddle being used.
- (9) The gunner elevates and rough-levels the elevation bubble, then ensures the traversing bearing is centered.
- (10) The assistant gunner lifts the bipod until its feet clear the ground (Figure 2).



Figure 2. Assistant Gunner Lifts Bipod

- (11) The gunner moves the mortar and aligns the sight approximately on the aiming posts.
- NOTE: In shifting the bipod, the gunner may either have the assistant gunner shift the bipod or shift it himself.
- (12) The gunner takes up the proper compensated sight picture (Figure 3) and fine-levels the sight.

Performance Steps

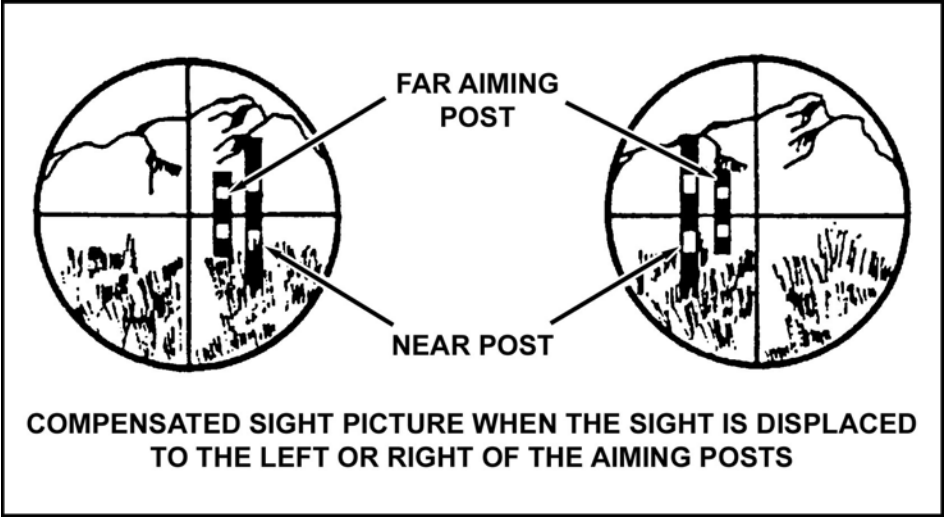


Figure 3. Compensated Sight Picture

- (13) When the gunner is satisfied with his sight picture and all bubbles are level, he announces, "Up."
- (14) The squad leader checks the mortar.
- d. The gunner moves the mortar as the ammunition bearer steadies it, and he attempts to horizontally maintain the traversing mechanism.
- e. The ammunition bearer moves into position to the front of the bipod on his right knee and grasps the bipod legs (palms out), lifting until they clear the ground enough to permit lateral movement.
- f. To make the shift, the gunner places the fingers of his right hand in the muzzle and his left hand on the left leg, and moves the mortar until the vertical line of the sight is aligned approximately on the aiming post.
- g. When the approximate alignment is completed, the gunner signals the ammunition bearer to lower the bipod by pushing down on the mortar.
- h. The gunner centers the elevation bubble then lays the mortar for deflection, taking the proper sight picture. The mortar should be within two turns of center of traverse when the exercise is completed.

NOTE: Conduct a check on learning and summarize the enabling learning objective.

Evaluation Preparation: Setup: At the test site, provide all equipment and information given in the task condition statement.

Brief Soldier: Tell the Soldier to use the equipment and information provided, to make small deflection and elevation changes on a 60-mm mortar without the aid of an assistant gunner, and to make large deflection and elevation changes on a 60-mm mortar (with or without the aid of an assistant gunner).

Performance Measures

NOTE: The following requirements must be met to perform small deflection and elevation changes.

	<u>GO</u>	<u>NO GO</u>
1. Correctly set deflection and elevation change.	_____	_____
2. Leveled both bubbles on the sight (within outer red lines).	_____	_____
3. Placed the vertical crossline within 2 mils of the left edge of the aiming posts.	_____	_____
4. Ensured time does not exceed 35 seconds.	_____	_____

Performance Measures

NOTE: The following requirements must be met to perform large deflection and elevation changes without saddle change.

- | | <u>GO</u> | <u>NO GO</u> |
|--|-----------|--------------|
| 5. Correctly set sight for deflection and elevation (no tolerance). | _____ | _____ |
| 6. Leveled both bubbles on the sight (within outer red lines). | _____ | _____ |
| 7. Placed the vertical crossline within 2 mils of the compensated sight picture. | _____ | _____ |
| 8. Centered the traversing mechanism within two turns of center traverse. | _____ | _____ |
| 9. Ensured time did not exceed 75 seconds. | _____ | _____ |

NOTE: The following requirements must be met to perform large deflection and elevation and elevation changes with saddle change.

- | | | |
|--|-------|-------|
| 10. Correctly set deflection and elevation (no tolerance). | _____ | _____ |
| 11. Leveled both bubbles on the sight (within outer red lines). | _____ | _____ |
| 12. Moved the bipod from lower to upper or upper to lower saddle. | _____ | _____ |
| 13. Placed the vertical crossline of the sight within 2 mils of the compensated sight picture. | _____ | _____ |
| 14. Centered the traversing mechanism to within two turns of center traverse. | _____ | _____ |
| 15. Ensured time does not exceed 75 seconds. | _____ | _____ |

NOTE: The gunner repeated each element of the fire command.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-90

FM 23-91

TM 9-1010-223-10

Subject Area 9: 84-MM CARL GUSTAV RECOILLESS RIFLE(RCLR)

Apply Immediate Action to a Carl Gustaf 84-mm Recoilless Rifle (RCLR)**331-201-2101****Conditions:** Given a Carl Gustaf 84-mm RCLR, one L42A1 (dummy) round, and an assistant gunner.**Standards:** Apply immediate action within 3 minutes to correct a misfire.**Performance Steps**

1. Perform misfire procedures.
 - a. Gunner.
 - (1) Maintain point of aim.
 - (2) Recock the weapon with the right thumb.
 - (3) Put the safety catch on S with the left hand.
 - (4) Announce to the assistant gunner, "Check venturi lock."
 - (5) After the assistant gunner taps venturi lock to the rear and reports "Venturi lock checked," place the safety check on F, aim again, and attempt to fire.
 - b. Assistant gunner.
 - (1) After the gunner announces, "Check venturi lock," repeat the announcement.
 - (2) Tap the venturi lock knob to the rear and report to the gunner, "Venturi lock checked; backblast area clear."
2. Perform the following procedures when the weapon fails to fire a second time.
 - a. Gunner.
 - (1) Announce, "Misfire."
 - (2) Wait 1 minute, while maintaining sight picture, in the event of a possible hangfire.
 - (3) If weapon has not fired after 1 minute, recock the weapon with the right thumb.
 - (4) Place the safety catch on S with the left hand.
 - (5) Announce, "Misfire unload."
 - b. Assistant gunner.
 - (1) Repeat, "Misfire."
 - (2) Wait 1 minute.
 - (3) Repeat, "Misfire unload." Unload and remove the round at least 50 meters away from the weapon.

NOTE: After removing the round, inspect the primer. If the primer has been dented, dispose of the round in accordance with (IAW) unit standing operating procedures (SOP). If the primer has not been dented, inspect the weapon for mechanical failure.

Performance Measures**GO NO GO**

1. Correct a misfire by applying immediate action in the correct sequence within 3 minutes.

— —

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

**Prepare the Carl Gustaf 84-mm Recoilless Rifle (RCLR) for Firing
331-201-2102**

Conditions: Given a Carl Gustaf 84-mm RCLR.

Standards: Prepare the Carl Gustaf 84-mm RCLR for firing by performing safety checks within 2 minutes.

Performance Steps

NOTE: Perform safety checks before firing the Carl Gustaf 84-mm RCLR.

1. Clear the weapon.
2. Examine the ammunition to ensure it is the proper type.
 - a. Only dummy rounds will be used in the classroom.
 - b. No dummy rounds will be taken on the range.
 - c. Training practice tracer (TPT) and high-explosive antitank-tracer (HEAT-T) rounds will be loaded only when on the range and only when the weapon is pointed downrange.
3. Ensure the backblast area is clear of all personnel and loose debris.

NOTE: Backblast area for this weapon is a 45-degree arc extending from the breech backward 30 meters.

Performance Measures

GO **NO GO**

- | | | |
|---|---|---|
| 1. Prepare the Carl Gustaf 84-mm RCLR for firing within 2 minutes by performing, in the proper sequence, the correct safety checks. | — | — |
|---|---|---|

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

**References
Required**

Related
ISBN 0710619251

Engage Targets With the Carl Gustaf 84-mm Recoilless Rifle (RCLR)

331-201-2103

Conditions: Given a Carl Gustaf 84-mm RCLR equipped with a No. 78 MK1 telescope sight, one round of high-explosive antitank (HEAT) ammunition, a live-fire range with a stationary target 300 meters to your front, and an assistant gunner.

Standards: Engage the target within 30 seconds.

Performance Steps

1. Load the weapon.
2. Sight the weapon.
 - a. No. 78 MK1 telescope.
 - (1) Estimate the range to the target.
 - (2) Set the range on the range knob.
 - (3) Position eye to the rear of the telescope.
 - (4) Move head forward or backward until a full view of the target is obtained.
 - (5) Place the pointer or appropriate lead mark on the center of the visible mass of the target.
 - b. Open sight.
 - (1) Fold the front and rear sights out from their position against the barrel.
 - (2) Set the estimated range using the correct temperature mark.
 - (3) Take a normal sight picture.

NOTE: Consider strong winds when firing, particularly at longer ranges; there is no specific amount of "aim off" given; but, as a guide, in a strong wind at a range of about 300 meters, aim at the rear edge or upwind side of the turret as opposed to the center of the visible mass.

3. Fire the weapon.
 - a. Gunner.
 - (1) Identify the target.
 - (2) Place the safety catch on F.
 - (3) Aim and apply slight pressure on the trigger.
 - (4) When satisfied with the aim, fire the weapon.
 - (5) Observe the flight and strike of the projectile.
 - (6) Use this method from all firing positions.

CAUTION: Should the backblast area not be clear at anytime, the assistant gunner will announce "cease fire." When "cease fire" is called, repeat "cease fire," put the safety catch on S and, if necessary, unload the weapon until the rear area is clear.

- b. Assistant gunner.
 - (1) Repeat either "load" or "unload," and perform the appropriate procedure.
 - (2) Constantly monitor the backblast area, and announce "cease fire" if it is not clear.
 - (3) When the backblast area is clear, announce "backblast area clear" to the gunner.

Performance Measures

GO **NO GO**

1. Engage target within 30 seconds.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Prepare a Carl Gustaf 84-mm Recoilless Rifle (RCLR) Round for Firing
331-201-2104

Conditions: Give one round each of L40A4 (high-explosive antitank-tracer [HEAT-T]), FFV65 (HEAT-T), C46 (training practice tracer [TPT]), FFV65 (TPT), 6.5-mm practice (with or without tracer), and an inert round.

Standards: Prepare the designated round for firing within 2 minutes.

Performance Steps

1. Type of ammunition.
 - a. 84-mm (HEAT-T) L40A4. Black anodized finish. A small yellow band encircles the body just below the distance tube. Yellow identification markings on the body and the tracer symbol "T" stenciled below the details of the explosive filling.
 - b. 84-mm (HEAT-T) FFV65. Black anodized finish with yellow identification markings stenciled on the body.
 - c. 84-mm (TPT) FFV65. Projectile's body is painted light blue with white identification markings stenciled on the body. The distance tube retains its black anodized finish and the tracer symbol "T" is stenciled in red above the identification markings.
 - d. 84-mm (TPT) C46. The designation allocated the Swedish FFV65 when produced and manufactured in Canada. The markings are the same as the 84-mm (TPT) FFV65 above.
 - e. 6.5 mm with tracer. The tip of the projectile is painted red with a black band around the cannelure. One-half of the cartridge case base is blackened. The cartridge case is stamped with the manufacturer's number and the last two digits of the year of manufacture. Nontracer round is not color-coded.
 - f. 84-mm (dummy) L42A1. Projectile is painted dark blue. The cartridge has a black anodized finish, and white markings are stenciled on the projectile and the cartridge case.
2. Prepare the ammunition for firing.
 - a. Remove from the packaging materials.
 - b. Separate the two injection-molded tubes by removing the two self-tapping screws.
 - c. Unscrew the cap and remove the O-ring.
 - d. Remove the round.
 - e. Inspect the round.

WARNING: Explosive ammunition or components containing explosives must be handled with appropriate care at all times.

- (1) Inspect the packing to see that it is not broken or damaged.
- (2) Inspect the distance tube ensuring that it is not cracked or broken. Reject the round if the distance tube is damaged.
- (3) Inspect the cartridge to make sure it has not been dislodged or damaged. Reject the round if it is dislodged or damaged; keep the fuze or nose from being knocked. The FFV65 cartridge has a base detonating fuze. It is initiated electrically by a piezoelectric element located around the shoulder of the cartridge. The fuze is located in the base screw assembly of the projectile assembly. The L40A4 cartridge has a point-detonating fuze. It is initiated by the force of impact firing the priming composition in the fuze. The fuze is located in the forward end of the projectile distance tube.

NOTE: The essential difference between the HEAT-T FFV65 and the HEAT-T L40A4 cartridges is the fusing system.

WARNING: The piezoelectric crystals in a fired projectile that fails to function and becomes a blind may be hypersensitive to a change in temperature, a slight blow, or other force that causes stress in the crystal.

Performance Measures**GO****NO GO**

1. Prepare the round for firing within 2 minutes.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Boresight the Carl Gustaf 84-mm Recoilless Rifle (RCLR) 331-201-2105

Conditions: Given a Carl Gustaf 84-mm RCLR, front and rear boresights, a screwdriver, a stand or sandbags, and an assistant gunner.

Standards: Boresight the Carl Gustaf 84-mm RCLR within 10 minutes.

Performance Steps

NOTE: Boresighting is a method used to mechanically align the line of sight with the axis of the barrel, with the sight set at 0. Use a clearly defined aiming point at least 300 meters away when boresighting.

1. Boresights.
 - a. Rear boresight. It has a small aperture and is shaped like the base of the round. There is a recess for the cartridge guide that is fitted by opening the venturi, inserting the boresight with thumb and finger, and closing the venturi.
 - b. Front boresight. It is inserted into the muzzle so that the straight edges of the boresight are horizontal and uppermost.
2. Boresighting with the telescopic sight unit.
 - a. Set the range knob to 0.
 - b. Select a clearly defined aiming point at not less than 300 meters.
 - c. Ensure the gun is firmly mounted on the boresighting stand.
 - d. Look through the axis of the bore and lay in on the aiming point.
 - e. Loosen the locking screws from the elevation and horizontal drums, and align the graticule pointer with the aiming point.
 - f. Tighten the locking screws.
 - g. Loosen the elevation and horizontal clamping screws, and set the scales to 0 using the white center or index line.
 - h. Recheck the boresighting.
3. Boresighting with the open sights.
 - a. Be sure that the gun is held securely and aligned on the aiming mark with the telescopic sight unit off and the open sights folded out.
 - b. Aim through the open sights to see if the gun is already boresighted. If not, using the range knob and deflection screws, move the backsight onto the aiming point.
 - c. Without disturbing the range knob, unclamp the range indicator, set the indicator to 0 using the center of the aiming point, and reclamp.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Boresight the Carl Gustaf 84-mm RCLR with the open sights within 10 minutes.	—	—
2. Boresight the Carl Gustaf 84-mm RCLR with the telescopic sight within 10 minutes.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Operate a Carl Gustaf 84-mm Recoilless Rifle (RCLR)**331-201-2106**

Conditions: Given a Carl Gustaf 84-mm RCLR with a No. 78 MK1 telescope, one L42A1 (dummy) round, and an assistant gunner.

Standards: As the assistant gunner, load and unload the Carl Gustaf 84-mm RCLR within 1 minute.

Performance Steps

1. Load the weapon.
 - a. Gunner.
 - (1) Assume the firing position.
 - (2) Push the cocking handle forward with the right thumb, returning the right hand to the firing grip with the index finger running along the trigger guard.
 - (3) Put the safety catch on S with the left hand and return the left hand to the front grip.
 - (4) Give the order, "Load," to the assistant gunner.
 - b. Assistant gunner.
 - (1) Repeat, "Load."
 - (2) Open the breech by pushing the venturi lock knob forward with the right hand and rotating the venturi with the left hand on the venturi lever.
 - (3) Examine the breech and barrel for dirt or unburnt propellant. If the chamber is dirty, clean it.
 - (4) Pick up the round, nose forward, with the right hand, using the underhand grip; remove the rubber protective cover and grasp the rim of the round with the left hand, placing a finger in the recess in the rim of the round.
 - (5) Insert the round into the chamber, ensuring that the recess is in line with the cartridge guide.
 - (6) Close the breech with the left hand.
 - (7) Tap the venturi lock knob to the rear to ensure that the lock is closed.
 - (8) Check the backblast area and report, "Backblast area clear."
2. Unload the weapon.
 - a. Gunner.
 - (1) Place the safety catch on S with the left hand.
 - (2) Return the left hand to the front grip.
 - (3) With the trigger hand on the firing grip, place the right index finger along the trigger guard.
 - (4) Announce, "Unload."
 - (5) After receiving "Clear" from the assistant gunner, place the safety catch on F, press the trigger, and remove the telescope.
 - b. Assistant gunner.
 - (1) Repeat, "Unload."
 - (2) Open the breech and tap the venturi lock knob forward to partially eject the round or empty casing.
 - (3) Grasp the rim of the round or empty casing with the left hand, and remove it from the chamber. If it is a casing, cast it aside out of the backblast area. If it is a live round, catch it with an underhand grip of the right hand.
 - (4) Close the breech with the left hand.
 - (5) Tap the venturi lock knob to the rear.
 - (6) Report, "Clear."

Performance Measures

GO

NO GO

1. The assistant gunner loads and unloads the Carl Gustaf 84-mm RCLR within 1 minute.

—

—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Maintain the Carl Gustaf 84-mm Recoilless Rifle (RCLR)
331-201-2107

Conditions: Given a Carl Gustaf 84-mm RCLR and a screwdriver.

Standards: 1. Disassemble the Carl Gustaf 84-mm RCLR within 5 minutes.
 2. Reassemble the Carl Gustaf 84-mm RCLR within 5 minutes.

Performance Steps

1. Disassemble the weapon.
 - a. Clear the weapon.
 - b. Remove the firing rod spring and the firing pin.
 - (1) Remove the front cap while holding the cap firmly against the pressure of the firing rod spring.
 - (2) Withdraw the spring from the firing mechanism housing.
 - (3) Push the cocking handle as far forward as possible.
 - (4) Unscrew the rear cap and withdraw the firing pin.
 - c. Remove the cocking handle and the firing rod.
 - (1) Unscrew the screws of the cocking handle and withdraw the handle from the head of the firing rod.
 - (2) Press the trigger and withdraw the firing rod from the front of the housing.
 - d. Remove the retaining leaf spring, safety catch, trigger, and sear.
 - (1) Remove the screw, then (in this order) remove the retaining leaf spring, the trigger, the sear axis pins, and the safety catch shank.
 - (2) Remove the safety catch.
 - (3) Withdraw the axis pins and remove the trigger with its spring.
 - (4) Withdraw the sear axis pin and remove the sear with the spring.
 - e. Remove the extractor and extractor pin.
 - (1) Unscrew the extractor axis screw and remove the extractor with spring.
 - (2) Separate the extractor and spring by removing the screw.
2. Reassemble the weapon.
 - a. Replace the extractor and extractor spring.
 - (1) Place the spring onto the extractor and secure with the screw.
 - (2) Replace the extractor and spring and secure with the extractor axis screw.
 - b. Replace the retaining leaf spring, safety catch, trigger, and sear.
 - (1) Replace the sear with spring and insert the sear axis pin.
 - (2) Replace the trigger with its spring and insert the axis pins.
 - (3) Replace the safety catch.
 - (4) Connect the retaining leaf spring to the trigger, sear axis pins, and safety catch shank, and replace the screw.
 - c. Replace the cranking handle and firing rod.
 - (1) Replace the rod into the front of the housing; then replace the trigger.
 - (2) Replace the cocking handle to the head of the firing rod and secure with the screw.
 - d. Replace the firing rod spring and the firing pin.
 - (1) Insert the firing pin and secure it by screwing on the rear cap.
 - (2) Push the cocking handle as far forward as possible.
 - (3) Using the front cap to absorb the pressure of the firing rod spring, place it into the firing mechanism housing and screw the front cap on.

Performance Measures

1. Disassemble the Carl Gustaf 84-mm RCLR within 5 minutes.

GO **NO GO**

Performance Measures

GO

NO GO

2. Reassemble the Carl Gustaf 84-mm RCLR within 5 minutes.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Subject Area 10: OPTICS

Zero a Night Vision Sight AN/PVS-4 to an M249 Machine Gun**071-010-0001**

Conditions: Given an M249 machine gun with a mounted night vision sight AN/PVS-4 equipped with an M14-M60 sight reticle pattern, 5.56-mm ammunition, two 25-meter (M16A2) zeroing targets with a marked aiming point and a marked impact point 8 centimeters directly below and 2 centimeters right of the aiming point at a distance of 25 meters from the firing point, and a basic machine gun paster target.

Standards: Night vision sight AN/PVS-4 has been adjusted so that correct alignment of the night vision sight AN/PVS-4 reticle zero range aiming point on the target aiming point will produce a shot group that is 8 centimeters below and 2 centimeters right of the target aiming point.

Performance Steps

CAUTION: When using the nightsight in bright light conditions, be sure to use the daylight cover. This prevents the bright light from damaging the nightsight's image intensifier.

NOTE: The sight may be zeroed during daylight or darkness. If zeroed during daylight, the daylight cover must be used.

1. Procedures for zeroing the M249 machine gun.
 - a. Make sure the reticle designed for use with the M249 machine gun is installed in the sight.
 - b. Mark the selected target with the appropriate impact point.
 - c. Place the selected target at a range of 25 meters.
 - d. Place the sight in operation. Mount the sight to the weapon. Adjust the azimuth and elevation controls so that the reticle aiming point appears to be centered in the sight's field of view (Figure 1).

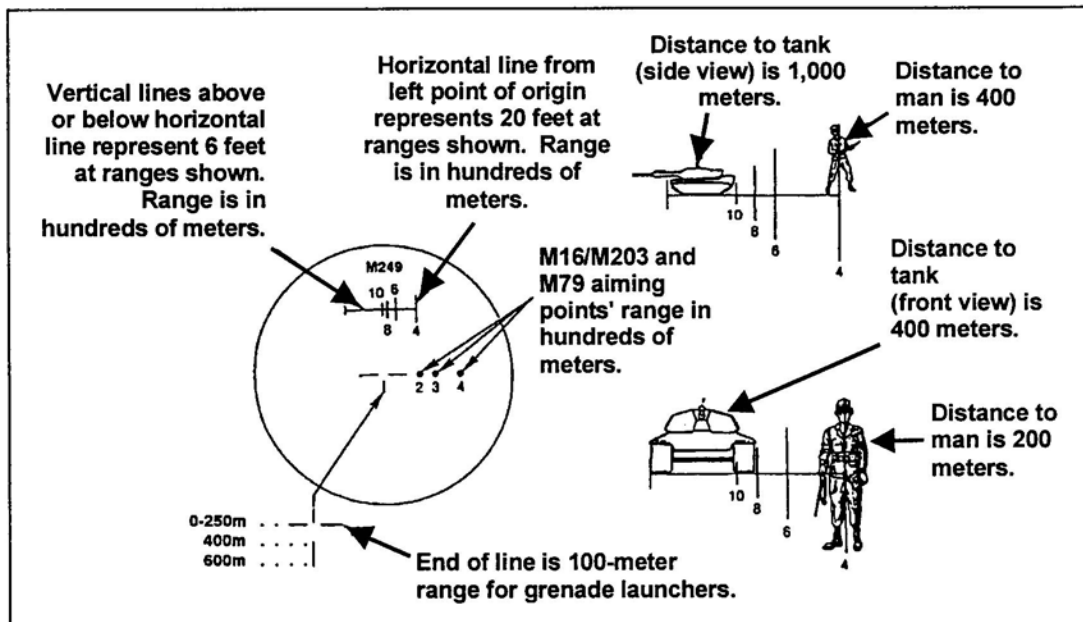


Figure 1. Place the Sight in Operation

Performance Steps

- e. Fire a few rounds to seat the sight on the weapon. Retighten all mounting screws and knobs.
- f. Place the zeroing range aiming point of the reticle on the target aiming point. Fire enough rounds to obtain a good shot group. Locate the center of the shot group (Figure 2).
- g. Determine the distance (up/down and right/left) between the center of the shot group and the impact point on the target.
- h. Adjust the reticle to move the center of the shot group the measured distance to the impact point. Repeat steps f and g until the impact point on the target is at the center of the shot group. The sight is now zeroed to the weapon.

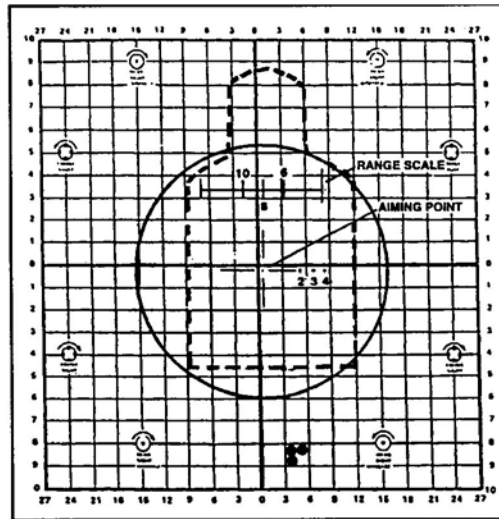


Figure 2. Locate Center of Shot Group

NOTE: Reticle adjustment actuators are marked to indicate the direction in which round impact moves. Each click of the azimuth or elevation adjustment actuators moves the strike of the round 0.63 centimeters (0.25 inch) at 25 meters.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier that he must zero a night vision sight AN/PVS-4 to an M249 machine gun.

Performance Measures**GO NO GO**

1. Zeroed the AN/PVS-4 to an M249 machine gun.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-14

TM 11-5855-213-10

Mount a Night Vision Sight AN/PVS-4 on an M249 Machine Gun

071-010-0002

Conditions: Given an M249 machine gun, night vision sight AN/PVS-4, and night vision sight mounting bracket assembly for the M249 machine gun.

Standards: Night vision sight mounting bracket assembly is installed on the weapon, and night vision sight AN/PVS-4 is secured to the mounting bracket assembly without causing damage to equipment or injury to personnel.

Performance Steps

CAUTION: When mounting an AN/PVS-4 night sight on a mounting bracket, align the mounting screw hole on the sight so it fits flush against the mounting bracket

1. Install the mounting bracket assembly (Figure 1).

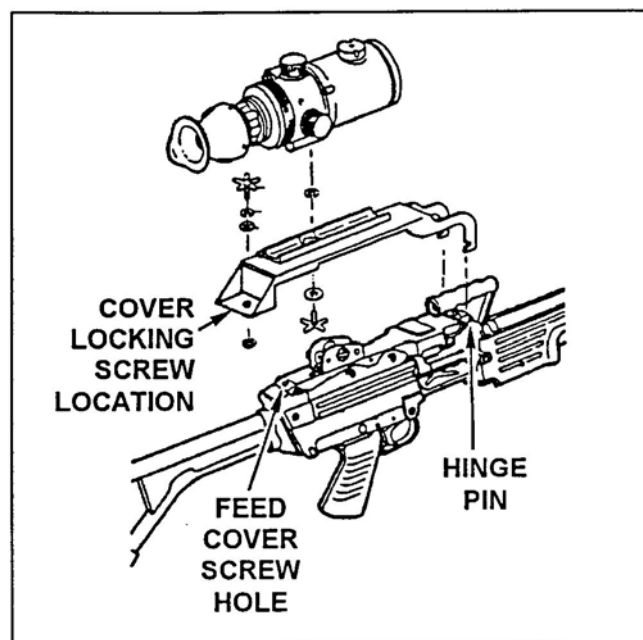


Figure 1. Install Mounting Bracket Assembly

- a. Hook the mounting bracket feet around the feed cover pin and position the bracket on top of the weapon.
- b. Turn the mounting bracket locking screw into the feed cover screw hole to secure the bracket.
2. Install the sight on the mounting bracket on the weapon.
 - a. Place the sight on the mounting bracket. Align the mounting screw hole on the sight flush against the mounting bracket locking screw.
 - b. Tighten the sight mounting bracket locking screw to secure the nightsight to the bracket.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier that he must mount night vision sight AN/PVS-4 on the M249 machine gun.

Performance Measures

1. Installed the mounting bracket on the weapon.

GO NO GO

— —

Performance Measures

GO **NO GO**

2. Installed the nightsight on the mounting bracket.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-14

TM 11-5855-213-10

Dismount a Night Vision Sight AN/PVS-4 from an M249 Machine Gun
071-010-0003

Conditions: Given an M249 machine gun with a mounted night vision sight AN/PVS-4, carrying case for night vision sight AN/PVS-4, and a requirement to remove the night vision sight AN/PVS-4 from the M249 machine gun.

Standards: Remove the night vision sight AN/PVS-4 and mounting bracket assembly from the M249 machine without damage to equipment.

Performance Steps

- 1. Remove the AN/PVS-4 night vision sight from the mounting bracket assembly.
 - a. Loosen the sight mounting screw by turning it counterclockwise until it is free of the sight.
 - b. Remove the sight from the mounting bracket.
- 2. Remove the mounting bracket assembly.
 - a. Loosen the mounting bracket screw until it is free of the feed cover mechanism.
 - b. Lift the mounting bracket assembly form the M249.
- 3. Stow AN/PVS-4 night vision sight and mounting bracket assembly.
 - a. Remove the batteries from the sight.
 - b. Place the sight and bracket in the carrying case.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task conditions statement.

Brief Soldier: Tell the Soldier that he must remove and stow the night vision sight AN/PVS-4 and mounting bracket assembly without damage to equipment.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Remove the sight from the mounting bracket assembly.	_____	_____
2. Remove the mounting bracket assembly.	_____	_____
3. Stow night vision sight AN/PVS-4 and mounting bracket assembly.	_____	_____

Evaluation Guidance: If the Soldier passes all steps, score him GO. IF he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References	Related
Required	FM 23-14
	TM 11-5855-213-10

Engage Targets With an M249 Machine Gun Using a Night Vision Sight AN/PVS-4

071-010-0007

Conditions: During darkness, given an M249 machine gun with a mounted night vision sight AN/PVS-4 equipped with an M14-M60 sight reticle pattern that has been zeroed and placed into operation, 5.56-mm ammunition, enemy targets, and a requirement to engage such targets.

Standards: All enemy targets have been destroyed.

Performance Steps

1. Place night vision sight, AN/PVS-4, into operation.
2. Assume a bipod-supported prone position or a bipod-supported fighting position. (These are the best positions for delivering effective M249 fire on targets when using the AN/PVS-4.)
3. Detect and estimate range to the target.
4. Acquire a good sight picture. Adjust the weapon to place the correct aiming point (based on range to target) on the center base of the target.
5. Use the center point between the two horizontal lines in the middle of the reticle as the aiming point for ranges 0 to 300 meters.

NOTE: Aiming points for ranges from 300 to 800 meters appear as small dots in a vertical line down through the center of the reticle.

- a. Use aiming points 4 and 6 (400 and 600 meters) to fire at 400- and 600-meter targets, respectively.
 - b. Use aiming point 8 (800 meters) to fire at 700-meter targets.
 - c. Use aiming point 10 (1,000 meters) to fire at 800-meter targets.
6. Fire the weapon in three-round bursts at the rate of fire appropriate for the size of the target. Use correct trigger manipulation techniques (that is, pull the trigger straight to the rear, then release it).
 7. Apply the correct engagement technique based on target types.
 - a. Fixed fire. This is fire delivered against a point target (that is, against one aiming point) when the depth and width of the beaten zone covers the target completely.
 - b. Traversing fire. This is fire distributed in width by successive changes in direction, which means moving the muzzle of the weapon to the left or right to distribute fire laterally. To make minor changes in direction, shift the shoulders to the right or left to locate successive aiming points throughout the width of the target area. For major changes, move the elbows and align the body to remain directly behind the gun.
 - c. Searching fire. This is fire distributed in width by successive changes in elevation, which means moving the muzzle of the weapon up or down to distribute fire in depth and choosing successive aiming points in depth throughout the target area. To make changes in elevation, move elbows closer together (this lowers the muzzle) or farther apart (this raises the muzzle).
 - d. Traversing and searching fire. This is fire distributed in width and depth by successive changes in direction and elevation. Combining traversing and searching fire provides good target coverage. Make adjustments the same way you would for traversing or searching fire. This means moving the muzzle of the weapon to the left or right to distribute fire laterally. To make minor changes in direction, shift the shoulders to the right or left and choose successive aiming points throughout the width of the target area. For major changes, move the elbows and align the body to remain directly behind the gun.
 8. Use observation of fire and adjustment of fire to place effective fire on the target.
 - a. Observation of fire. Observe bursts of fire by noting the strike of the rounds in the target area or by observing tracers in flight.
 - b. Adjustment of fire. Use the adjusted aiming point method to quickly adjust fires without adjusting the sight. If the initial burst misses the target, rapidly select a new aiming point the

Performance Steps

same distance from the center of impact of the initial burst, but in the opposite direction. Fire a second burst.

9. Apply fire correctly to engage specific targets.
 - a. Point target. Engage point targets with fixed fire.
 - b. Area target. Initially aim at the midpoint of the target area. Traverse and search to either flank, then back to the opposite flank.
 - c. Linear target. Initially aim at the midpoint of the target. Traverse fire from one flank to the other to cover the entire target.
 - d. Deep target. Initially aim at the midpoint of the target, unless another portion of the target is more critical or presents a greater threat. Search down to an aiming point in front of the near end, then back up to an aiming point beyond the far end.
 - e. Linear target with depth. Initially aim at the midpoint of the target, unless another portion of the target is more critical or presents a greater threat. Traverse and search to the flank closest to your position, then back to the other flank to cover the entire target.
 - f. Moving target. To hit a moving target, estimate the speed of the target and the lead required to hit it. Fire, then track the target as it moves. Adjust the lead by observing tracers and bullet strikes.

Evaluation Preparation: Setup: Evaluate this task on a live-fire range. Have the Soldier fire Table III, Tasks 2 through 6 (FM 23-14, page 5-49). Evaluate the Soldier's ability to use correct engagement techniques to engage specific targets. Provide the Soldier with equipment and materials required to fire Table III, tasks 2 through 6.

Brief Soldier: Brief the Soldier on range safety in accordance with (IAW) installation standing operating procedure (SOP). Tell the Soldier to assume the bipod-supported prone position or the bipod-supported fighting position. Tell him you are evaluating his ability to place effective fire on targets using the AN/PVS-4-equipped M249 machine gun.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Placed a night vision sight AN/PVS-4 into operation.	_____	_____
2. Assumed a correct bipod-supported prone position or bipod-supported fighting position.	_____	_____
3. Detected and estimated the range to the target.	_____	_____
4. Placed effective fire on targets in three-round bursts at a rate of fire appropriate for the size of the target.	_____	_____
5. Applied correct engagement techniques based on the types of targets.	_____	_____
6. Applied fire correctly to engage specific targets.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-14

Mount an AN/PAS-13 Series Thermal Sight on an M249 Machine Gun

071-010-0008

Conditions: Given a cleared M249 machine gun, a night vision sight AN/PAS-13, and a requirement to mount the night vision sight AN/PAS-13 on the M249 machine gun.

Standards: Attached and secured the night vision sight AN/PAS-13 to the M249 machine gun.

Performance Steps

WARNING: Ensure weapon is not loaded and safety is on before installing the sight on the weapon. A loaded weapon may accidentally discharge, causing injury or death.

1. Install thermal weapon system (TWS) hinge pin.
 - a. Remove retaining clip from TWS hinge pin on M249 bracket and remove TWS hinge pin.
 - b. Remove retaining clip from M249 hinge pin.
 - c. Squeeze feed tray cover latches and swing feed tray cover completely forward.
 - d. Hold feed tray cover in the fully raised position. Use TWS hinge pin to push on M249 hinge pin, pushing right to left. As M249 hinge pin is being pushed out, push in TWS hinge pin.
 - e. Adjust position of TWS hinge pin so groove in TWS hinge pin is aligned with slot in feed tray cover. Install retaining clip.
 - f. Squeeze feed tray cover latches and lower feed tray cover until closed.
 - g. Place M249 hinge pin in hole of bracket. Align groove in M249 hinge pin with hole in bracket and install retaining clip.

NOTE: Remove shipping plug from threaded hole of feed tray cover.

2. Secure the mounting bracket to the cover.
 - a. Loosen thumbscrews.
 - b. Place grooves of bracket over ends of TWS hinge pin and lower bracket on feed tray cover of the M249.
 - c. Install bolt of bracket into threaded hole of feed tray cover. Hand tighten thumbwheel. Hand tighten thumbscrews on bracket.
 - d. Lower carrying handle.

CAUTION: When raising or lowering feed tray cover with TWS installed, avoid slamming TWS into heat shield or slamming feed tray cover closed.

3. Install TWS on rail.
 - a. Loosen knob on mount.
 - b. Select slot on rail for mounting. Any slot may be used as long as mount does not hang over edge of rail.
 - c. Place bar of mount in slot of rail and hand tighten knob on mount until clicking noise is heard.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier that he must mount the thermal sight AN/PAS-13 on the M249 machine gun.

Performance Measures

GO **NO GO**

1. Checked to ensure the weapon was clear.
2. Installed the sight on the M249 machine gun.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
TM 11-5855-309-12&P

Dismount an AN/PAS-13 Series Thermal Sight From an M249 Machine Gun **071-010-0009**

Conditions: Given a cleared M249 machine gun with a mounted AN/PAS-13 series thermal weapon sight (TWS) and TWS carrying case with basic issue items. The TWS brightness control switch is at the off position, and the battery is installed.

Standards: Removed TWS from the M249 machine gun without damage to equipment. Stowed TWS and battery in correct place in the carrying case.

Performance Steps

WARNING: Ensure weapon is not loaded and safety is on before removing bracket/TWS from weapon. A loaded weapon may accidentally discharge, causing injury or death.

CAUTION: Avoid handling or carrying TWS by the eyecup, objective lens cover, or battery cover latch. Any one of these items may detach from the system, causing it to drop.

1. Check to ensure M249 is clear and safety is on.
2. Remove the TWS from the M249.
 - a. Secure the TWS with one hand to prevent it from falling, and loosen the knob on mount by turning counterclockwise.
 - b. Remove TWS from rail.
3. Remove M249 bracket.
 - a. Unscrew thumbwheel from the M249.
 - b. Loosen thumbscrews on bracket and lift bracket off of the M249.
4. Install M249 hinge pin.
 - a. Remove retaining clip from M249 hinge pin on bracket and remove M249 hinge pin.
 - b. Remove retaining clip from TWS hinge pin.
 - c. Squeeze feed tray cover latches and swing feed tray cover completely forward.
 - d. Hold feed tray cover in the fully raised position. Use M249 hinge pin to push on TWS hinge pin, pushing right to left. As TWS hinge pin is being pushed out, push in M249 hinge pin.
 - e. Adjust position of M249 hinge pin so groove in hinge pin is aligned with slot in feed tray cover. Install retaining pin.
 - f. Squeeze feed tray cover latches and lower feed tray cover until closed.
 - g. Place TWS hinge pin in hole of bracket. Align groove in TWS hinge pin with hole in bracket and install retaining clip.
5. Stow the TWS and components parts.
 - a. Ensure brightness knob is at the OFF position.
 - b. Ensure objective lens cover is closed.
 - c. Remove the battery, close and secure battery door.
 - d. Stow the TWS and battery in their proper compartments in the carrying case.
 - e. Place weapon bracket in pouch of carrying case.
 - f. Close and zip carrying case.

Evaluation Preparation: Setup: At the test sight, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to remove the thermal sight AN/PAS-13 from the M249 machine gun.

Performance Measures

1. Ensured the weapon was clear.

GO **NO GO**

Performance Measures**GO** **NO GO**

2. Removed TWS from the weapon.

3. Stowed TWS and components.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

TM 11-5855-301-12&P

Zero an AN/PAS-13 Series Thermal Sight to an M249 Machine Gun
071-010-0010

Conditions: On a range or on terrain suitable for firing small arms, given an AN/PAS-13 series thermal weapon system (TWS) mounted on an M249 machine gun and 5.56-mm ammunition. Given a cutting tool (knife or scissors), adhesive tape, E-type silhouette or E-type thermal silhouette, M16A2 25-meter zeroing target located 25 meters from the firing point.

Standards: Adjusted TWS so that a round fired from the M249 machine gun, used correct sight alignment, strike the desired point of impact on the zeroing target.

Performance Steps

1. Prepare M16A2 25-meter zeroing target for TWS zero.
 - a. Cut out a hole four squares wide by four squares high from the center of the M16A2 25-meter zeroing target.
 - b. Cut a piece of corrugated cardboard the same size as the M16A2 25-meter zeroing target.
 - c. Measure 1 inch from each side of the cardboard and cut out a rectangle. You should have a 1-inch cardboard frame.
 - d. Tape the cardboard frame to the back of the M16A2 25-meter zeroing target.
 - e. Affix the target to a standard E-type silhouette or E-type thermal silhouette located 25 meters from the firing position.
2. Assume a good firing position and place the TWS into operation.
3. Adjust TWS controls for rounds to impact at desired aim point on 25-meter zeroing target.
 - a. Set field of view (FOV) ring to WIDE position.
 - b. Press and release RETICLE SELECT switch until display shows M249 reticle.
 - c. Use RETICLE ADJUST switch to set azimuth and elevation indicators to zero (000L and 000D).

NOTE: The TWS reticle zeroing aim point is the aim point located between the zeroing aim lines.

- d. Load the M249 and place the selector lever to fire.
- e. Aim center mass of the 25-meter zeroing target and fire three-round shot groups until a shot group that is 4 centimeters or less in diameter is obtained. Check tightness of sight after first three-round shot group. Tighten if necessary.
- f. Adjust reticle to move center of shot group to the zero point of impact (5 1/2 squares below target aim point.)
 - (1) Determine azimuth and elevation adjustment required to move the center of the shot group to the desired point of impact.

NOTE: At 25-meter range, each increment (one click) of azimuth or elevation moves the strike of the round 1 1/4 centimeter for the medium weapon thermal sight (MWTS) wide field of view (WFOV) and 3/4 centimeter for MWTS narrow field of view (NFOV) and HWTS WFOV. However, when calculating for adjustments, use one click of azimuth or elevation to move strike of round one square on the 25-meter zero target.

- (2) Use the reticle adjust switch to adjust reticle position up (U), down (D), left (L) or right (R).
- (3) Fire and adjust reticle until five or six consecutive shots are within desired point of impact.
- (4) Record setting of azimuth and elevation indicators.
- (5) Set FOV to narrow position and perform steps b through f.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier that he must zero the thermal sight AN/PAS-13 to the M249 machine gun.

Performance Measures**GO** **NO GO**

1. Placed the thermal sight AN/PAS-13 into operation.
2. Zeroed the TWS to the M249 machine gun.

_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

TM 11-5855-309-12&P

Engage Targets With an M249 Machine Gun Using an AN/PAS-13 Series Thermal Sight

071-010-0011

Conditions: Given an M249 machine gun with a mounted and zeroed AN/PAS-13 series thermal weapons sight (TWS), linked 5.56-mm ammunition, threat targets, and a requirement to engage such targets.

Standards: Detected and determined range to targets. Fired the M249 machine gun to engage targets in the assigned sector of fire. Applied correct marksmanship fundamentals and target engagement techniques so that each target was hit or suppressed.

Performance Steps

1. Place TWS into operation.
2. Assume an appropriate firing position based on situation. The firing position should protect you from enemy fire and observation, yet allow you to place effective fire on targets in your sector of fire.
 - a. Prone position, bipod-supported. Advantages: steady, easy to assume, low silhouette, and easily adapted to use of cover and support. Disadvantages: effectiveness can be limited by terrain and vegetation irregularities.
 - b. Fighting position, bipod-supported. Advantages: best when available.
3. Identify targets in your designated sector of fire.
4. Load the weapon.
5. Acquire targets using TWS reticle.
 - a. Personnel: Place the target on the horizontal line and match its height with one of the vertical lines. Measurement is made from the horizontal line to the top (or bottom) of each vertical line for the range indicated. The vertical line of a crosshair reflects the height of a 5-foot man at the specified range.
 - b. Tank: When viewed from the side, place the left edge of a tank at the left side of the horizontal line. Read the range to the tank from the scale at the right edge of the tank. When viewed from front or rear, use one half the indicated range value (since width of the tank is approximately half the length of the tank). The horizontal line of a crosshair reflects the width of a 10-foot tank at the specified range.
 - c. The firing aim point of each crosshair is the point of intersection of the vertical and horizontal lines.
6. Fire on target(s) until destroyed, or until you receive an order to cease fire.

Evaluation Preparation: Setup: Evaluate this task on a live fire range. Evaluate the Soldier's ability to use correct engagement techniques to engage specific types of targets. Provide the Soldier with the equipment and materials in the task conditions statement.

Brief Soldier: Brief the Soldier on range safety in accordance with (IAW) installation standing operating procedure (SOP). Tell the Soldier to assume the bipod supported prone position or the bipod supported fight position. Tell him you are evaluating his ability to place effective fire on targets using the AN/PAS-13 equipped M249 machine gun.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Placed TWS into operation.	_____	_____
2. Assumed a suitable firing position.	_____	_____
3. Acquired targets.	_____	_____

Performance Measures**GO****NO GO**

4. Engaged targets using correct M249 firing techniques.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

TM 11-5855-309-12&P

Mount an AN/PAQ-4 Series Aiming Light on an M249 Machine Gun
071-010-0012

Conditions: Given a cleared M249 machine gun, an AN/PAQ-4 series aiming light, M249 mounting bracket, and a requirement to mount the aiming light to your machine gun.

Standards: Attached and secured the AN/PAQ-4 to the M249.

Performance Steps

1. Check to ensure the weapon is clear.
2. Mount the AN/PAQ-4-series aiming light vertically on the left side of the M249 machine gun using the M249 mounting bracket.

WARNING: Make sure the weapon is on SAFE before proceeding.

- a. Unscrew the wing nut from the bracket.
- b. Insert the bracket from the left side of the weapon into the hole in the front of the handguard. Fully seat it so that it does not rotate.
- c. Install and hand tighten the wing nut.
- d. Turn the ON/OFF switch counterclockwise (CCW) to the #1 OFF/STORAGE position.
- e. Position the aiming light on the bracket mounting rail. Hand tighten the thumbscrew to secure the aiming light.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier that he must mount the AN/PAQ-4 on the M249 machine gun.

Performance Measures

GO **NO GO**

- | | | |
|--|-------|-------|
| 1. Checked to ensure the weapon was clear. | _____ | _____ |
| 2. Installed the AN/PAQ-4 on the M249 machine gun. | _____ | _____ |

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 11-5855-301-12&P

Dismount a Night Vision Sight AN/PAQ-4 From an M249 Machine Gun
071-010-0013

Conditions: Given an AN/PAQ-4 series aiming light mounted on a M249 machine gun, and a requirement to dismount from your machine gun

Standards: Removed the AN/PAQ-4 from the machine gun without damage to equipment or personnel.

Performance Steps

WARNING: Do not store the AN/PAQ-4-series aiming light with batteries installed.

- 1. Check to ensure the weapon is clear.
- 2. Dismount the AN/PAQ-4-series aiming light from the M249 machine gun.
 - a. Detach the AN/PAQ-4-series aiming light from the M249 mounting bracket.
 - (1) Turn the mounting knob counterclockwise until the aiming light is loose.
 - (2) Remove the aiming light from the bracket along with spacer.
 - b. Remove the spacer from the aiming light.
 - c. Remove the M249 mounting bracket.
 - (1) Unscrew the bracket knob until the rear of the bracket is loose. Replace the screw cover behind the rear sight assembly.
 - (2) Remove the two forked ends from the headless pins and lift up on the mounting bracket to remove it from the feed cover mechanism assembly.
- 3. Stow the AN/PAQ-4-series aiming light and its component parts.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to remove the AN/PAQ-4 from the M249 machine gun.

Performance Measures	GO	NO GO
1. Checked to ensure the weapon was clear.	_____	_____
2. Removed the AN/PAQ-4 from the M249 machine gun.	_____	_____
3. Stowed the AN/PAQ-4 and component parts.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	TM 11-5855-301-12&P

Zero an AN/PAQ-4 Series Aiming Light to an M249 Machine Gun
071-010-0014

Conditions: Given an AN/PAQ-4 series aiming light mounted on a M249 machine gun, ammunition, an M16A2 25-meter zeroing target, and a requirement to zero the weapon.

Standards: Zeroed the M249 with an AN/PAQ-4 mounted when 2 out of 3 rounds hit the designated strike zone.

Performance Steps

1. Boresight the AN/PAQ-4-series aiming light to the M249.
 - a. Check the alignment of the borelight.
 - (1) Place the appropriate mandrel with the borelight attached in the muzzle of the weapon.
 - (2) Turn on the borelight so that the laser dot strikes the target (offset) 10 meters away.
 - (3) Slowly rotate the borelight a half turn (180 degrees) while watching the dot made by the laser on the target area.
 - (4) If the dot remains stationary, the laser is boresighted.
 - (5) If the dot rotates in a circle, the windage or elevation or both must be adjusted until the dot remains stationary or rotates on itself no more than 1 centimeter.
 - b. Adjust the borelight (if necessary).
 - (1) Move the target to a distance of 2 meters.
 - (2) Mark the location of the laser dot.
 - (3) Slowly rotate the borelight a half turn.
 - (4) Note the new location of the laser dot.
 - (5) Adjust the windage and elevation until the laser dot moves one half way back to its original location.
 - (6) Continue the procedure until the laser dot remains stationary (or spins upon itself within 1 centimeter) when the borelight is rotated.
 - (7) Move the target to a distance of 10 meters and recheck the boresight.
 - c. Boresight the AN/PAQ-4-series aiming light to the M249.
 - (1) Position the weapon so the borelight strikes the small dot on the boresight target.
 - (2) Zero the aiming light by turning both windage and elevation knobs (for the pointer and illuminator) fully clockwise until they stop. Rotate counterclockwise 5 1/2 turns and align the white dot on the adjuster with the center of the front adjuster flange.
 - (3) Adjust the aiming light until the emitted laser is on the appropriate dot on the boresight target.

NOTE: You must use a night vision goggle in order to see the dot from the laser. Boresight zeroing must be conducted at 10 meters.

- (4) Ensure the weapon is boresighted when the laser borelight is on the small dot and the emitted laser is on the cross.

NOTE: One click equals one square on the 25-meter target.

2. Zeroing.
 - a. Fire a round when the weapon is sighted precisely center mass of the 25-meter target and the beam appears dimmer.
 - (1) Choose the appropriate 25-meter strike zone for the weapon you are using and draw the strike zone on the 25-meter zero target.
 - (2) Staple the 25-meter zero target on an E-type silhouette and cut a 4-centimeter square out of the center through both the target paper and the E-type silhouette. Then place the target on the 25-meter range.
 - (3) Fire a three-round shot group. Remember to fire when the infrared aiming light's beam goes through the 4-centimeter cut-out in the target (the beam appears dimmer).
 - (4) Triangulate the three-round shot group and adjust the windage and elevation knobs on the aiming light to move the impact of the rounds to the designated strike zone.

Performance Steps

- (5) Repeat steps 3 and 4 until five out of six rounds from two consecutive shot groups are within the designated strike zone.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier that he must zero the AN/PAQ-4 to the M249 machine gun.

Performance Measures**GO** **NO GO**

1. Placed the AN/PAQ-4 into operation.

2. Zeroed the AN/PAQ-4 to the M249 machine gun.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

TM 11-5855-301-12&P

Engage Targets With an M249 Machine Gun Using an AN/PAQ-4 Series Aiming Light 071-010-0015

Conditions: Given a M249 machine gun with a mounted, zeroed AN/PAQ-4 series aiming light, magazines, ammunition, individual combat equipment, stationary or moving targets (personnel) at engageable ranges

Standards: Detected all stationary or moving targets within the assign sectors of fire using the proper search techniques without injury to friendly personnel or damage to equipment.

Performance Steps

1. Assume a suitable firing position.
2. Detect and estimate range to the target.
3. Press the on/off switch against the weapon handguard to activate the AN/PAQ-4-series aiming light.
4. Identify the AN/PAQ-4-series aiming light projection of infrared pulsing spot towards the target.
5. Acquire a good sight picture.
6. Fire the weapon in five- to seven-round bursts at the rate of fire appropriate for the size of the target.
7. Apply the correct engagement technique based on target types.
8. Release pressure on the switch to shut off the AN/PAQ-4-series aiming light when firing is complete.

Evaluation Preparation: Setup: Evaluate this task on a live fire range. Evaluate the Soldier's ability to use correct engagement techniques to engage specific types of targets. Provide the Soldier with equipment and materials stated in the task condition statement.

Brief Soldier: Brief the Soldier on range safety in accordance with (IAW) installation standing operating procedure (SOP). Tell the Soldier to assume the bipod supported prone position or the bipod supported fighting position. Tell him you are evaluating his ability to place effective fire on targets using the AN/PAQ-4 equipped M249 machine gun.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Placed AN/PAQ-4 into operation.	—	—
2. Assumed a suitable firing position.	—	—
3. Acquired targets.	—	—
4. Engaged targets using correct M249 firing techniques.	—	—

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 11-5855-301-12&P

Mount a Night Vision Sight AN/TVS-5 on a Caliber .50 M2 Machine Gun**071-022-0008**

Conditions: In a combat environment, given a mounted caliber .50 M2 machine gun, an operational AN/TVS-5 with all required accessories in a storage container, and a weapon-adaptor bracket.

Standards: Secured the mounting bracket to the receiver group so that the cover closed. Mounted and secured the sight with the lever screw.

Performance Steps

1. Remove the sight from its storage container.
 2. Conduct an inspection of the AN/TVS-5 and its accessories and perform operator maintenance as required.
 3. Ensure that the machine gun's rear sight is in the down position.
 4. Release the catch on the left side of the cartridge cover and raise the machine gun's cover group to the upright position.
 5. Position the mounting bracket over the breech of the machine gun and slide it rearward until it stops.
 6. Push the three locking cams to the rear to secure the bracket.
- NOTE: The side cam should be pushed first, then the two on top.
7. Close the cartridge cover.
 8. Install the sight on the mounting bracket assembly by aligning the scribe lines on the sight with the scribe lines on the bracket.
 9. Place the sight in the groove at the top of the bracket.
 10. Tighten the lever screw to secure the sight to the bracket.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to mount night vision sight AN/TVS-5 on the caliber .50 M2 machine gun.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Removed the sight from its storage container.	_____	_____
2. Conducted an inspection of the AN/TVS-5 and its accessories and performed operator maintenance as required.	_____	_____
3. Ensured that the machine gun's rear sight is in the down position.	_____	_____
4. Released the catch on the left side of the cartridge cover and raised the machine gun's cover group to the upright position.	_____	_____
5. Positioned the mounting bracket over the breech of the machine gun and slide it rearward until it stopped.	_____	_____
6. Pushed the three locking cams to the rear to secure the bracket.	_____	_____
NOTE: The side cam should be pushed first, then the two on top.		
7. Closed the cartridge cover.	_____	_____

Performance Measures

	<u>GO</u>	<u>NO GO</u>
8. Installed the sight on the mounting bracket assembly by aligning the scribe lines on the sight with the scribe lines on the bracket.	_____	_____
9. Placed the sight in the groove at the top of the bracket.	_____	_____
10. Tightened the lever screw and secured the sight to the bracket.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-65

TM 11-5855-214-10

Dismount a Night Vision Sight AN/TVS-5 From a Caliber .50 M2 Machine Gun
071-022-0009

Conditions: Given a vehicle- or ground-mounted caliber .50 M2 machine gun equipped with a night vision sight, AN/TVS-5, and a requirement to remove the night vision sight, AN/TVS-5, from the caliber .50 M2 machine gun.

Standards: Removed the mounting bracket assembly and the night vision sight, AN/TVS-5, from the caliber .50 M2 machine gun without damage to the equipment, and stowed in the carrying and storage case.

Performance Steps

1. Loosen the lever screw assembly.
2. Remove the sight from the mounting bracket and correctly stow it in the carrying and storage case.
3. Open and raise the cover of the caliber .50 M2 machine gun.
4. Unlock the three locking cams on the mounting bracket.
5. Remove the mounting bracket assembly and correctly stow it in the carrying and storage case.
6. Close the cover of the caliber .50 M2 machine gun.
7. Close and secure the carrying and storage case.

Evaluation Preparation: Setup: At the test site, provide all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to remove the night vision sight AN/TVS-5 from the caliber .50 M2 machine gun.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Loosened the lever screw assembly.	_____	_____
2. Removed the sight from the mounting bracket and correctly stowed it in the carrying and storage case.	_____	_____
3. Opened and raised the cover of the caliber .50 M2 machine gun.	_____	_____
4. Unlocked the three locking cams on the mounting bracket.	_____	_____
5. Removed the mounting bracket assembly and correctly stowed it in the carrying and storage case.	_____	_____
6. Closed the cover of the caliber .50 M2 machine gun.	_____	_____
7. Closed and secured the carrying and storage case.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

STP 31-18B34-SM-TG

**References
Required**

Related
FM 23-65
TM 11-5855-214-10

Mount an AN/PAS-13 Series Thermal Sight on a Caliber .50 Machine Gun
071-022-0017

Conditions: Given a cleared caliber .50 M2 machine gun, a night vision sight, AN/PAS-13, and a requirement to mount the night vision sight, AN/PAS-13, on the caliber .50 M2 machine gun.

Standards: Attached and secured the night vision sight, AN/PAS-13, to the caliber .50 M2 machine gun.

Performance Steps

WARNING: Ensure weapon is not loaded and safety is on, before installing the sight to the weapon. A loaded weapon may accidentally discharge, causing injury or death.

1. Mount the M2 bracket on the M2 machine gun.
 - a. Fold rear sight forward to storage position.
 - b. Release the cover latch at side of cover and fully raise cover.
 - c. Release three locking cams on bracket.
 - d. Place bracket over breech of M2 machine gun.
- NOTE:** If bracket sticks before reaching position, rock bracket up and down while sliding.
- e. Slide bracket over ledge of M2 machine gun until inside edge of bracket touches front edge of rear sight base.
 - f. Swing side locking cam towards rear of M2 machine gun.
 - g. Lower cover until cover latch engages.
 - h. Loosen locking knob and swing range lever to near position. Hand tighten knob.
2. Install thermal weapon sight (TWS) on rail.
 - a. Loosen knob on mount.
 - b. Select slot on rail for mounting. Any slot may be used as long as mount does not hang over edge of rail.
 - c. Place bar of mount in slot of rail and hand tighten knob on mount until clicking noise is heard.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to mount the AN/PAS-13 on the caliber .50 M2 machine gun.

Performance Measures	GO	NO GO
1. Ensured the weapon was cleared.	_____	_____
2. Installed the sight on the caliber .50 M2 machine gun.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	TM 11-5855-309-12&P

Dismount an AN/PAS-13 Series Thermal Sight on a Caliber .50 Machine Gun **071-022-0018**

Conditions: Given a cleared M2 machine gun with a mounted AN/PAS-13 thermal weapons sight (TWS); a TWS carrying case with basic issue items; the TWS brightness control switch is at the off position; and the battery is installed.

Standards: Removed the TWS from the M2 machine gun without damage to equipment. Stowed TWS and battery in correct place in the carrying case.

Performance Steps

WARNING: Ensure weapon is not loaded and safety is on before removing bracket from the weapon. A loaded weapon may accidentally discharge, causing injury or death.

CAUTION: Avoid handling or carrying the weapon by the eyecup, the objective lens cover, or the battery cover latch. Any one of these items may accidentally detach from the system, causing it to drop.

1. Check to ensure M2 is clear and safety is on.
2. Remove the TWS from the M2.
 - a. Secure the TWS with one hand to prevent it from falling and loosen the knob on mount by turning counterclockwise.
 - b. Remove TWS from rail.
3. Remove M2 bracket from M2 machine gun.
 - a. Release two top locking cams.
 - b. Release the side locking cam.
4. Stow the TWS and components parts.
 - a. Ensure brightness knob is at the off position.
 - b. Ensure objective lens cover is closed.
 - c. Remove the battery, close and secure battery door.
 - d. Stow the TWS and battery in their proper compartments in the carrying case.
 - e. Place weapon bracket in pouch carrying case.
 - f. Close and zip carrying case.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to remove the AN/PAS-13 from the caliber .50 M2 machine gun.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Checked to ensure the weapon is clear.	_____	_____
2. Removed TWS from the weapon.	_____	_____
3. Stowed the TWS and component parts.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
 TM 11-5855-309-12&P

Zero an AN/PAS-13 Series Thermal Sight to a Caliber .50 Machine Gun
071-022-0019

Conditions: On a range or on terrain suitable for firing small arms, given an AN/PAS-13 series thermal sight mounted on an M2 machine gun mounted on a tripod mount, M3 and caliber .50 ammunition. Given a cutting tool (knife or scissors), adhesive tape, E-type silhouette or E-type thermal silhouette, M16A2 25-meter zeroing target located 25 meters from the firing point.

Standards: Adjusted the thermal weapon sight (TWS) so that a round fired from the M2 machine gun, used the correct sight alignment, strike the desired point of impact on the zeroing target.

Performance Steps

1. Prepare M16A2 25-meter zeroing target for TWS zero.
 - a. Cut out a hole four squares wide by four squares high from the center of the M16A2 25-meter zeroing target.
 - b. Cut a piece of corrugated cardboard the same size as the M16A2 25-meter zeroing target.
 - c. Measure 1 inch from each side of the cardboard and cut out a rectangle. You should have a 1-inch cardboard frame.
 - d. Tape the cardboard frame to the back of the M16A2 25-meter zeroing target.
 - e. Affix the target to a standard E-type silhouette or E-type thermal silhouette located 25 meters from the firing position.
2. Assume a good firing position and place the TWS into operation.
3. Adjust TWS controls for rounds to impact at desired aim point on 25-meter zeroing target.
 - a. Set range lever on M2 bracket to near position and hand tighten locking knob.
 - b. Set field of view (FOV) ring to WIDE position.
 - c. Press and release RETICLE SELECT switch until display shows M2 reticle.
 - d. Use RETICLE ADJUST switch to set azimuth and elevation indicators to zero (000L and 000D).

NOTE: The TWS reticle zeroing aim point is the aim point located between the zeroing lines.

- e. Load the caliber .50 M2 machine gun and place the selector lever to fire.
- f. Aim center mass at the 25-meter zeroing target and fire shot groups until you obtain a shot group that is 4 centimeters or less in diameter. Check tightness of sight after first shot group. Tighten if necessary.
- g. Adjust reticle to move center of shot group to the zero point of impact. (9 squares [8.3 centimeters] below target aim point).
 - (1) Determine azimuth and elevation adjustment required to move the center of the shot group to the desired point of impact.
 - (2) Use the reticle adjust switch to adjust reticle position up (U), down (D), left (L), or right (R).
 - (3) Fire and adjust reticle until five or six consecutive shots are within desired point of impact.
 - (4) Record setting of azimuth and elevation indicators.
- h. Set FOV to narrow position and perform step b through g.

NOTE: At 25-meter range, each increment (one click) of azimuth or elevation setting moves the strike of the round $\frac{3}{4}$ centimeter for heavy weapon thermal sight (HWTS) wide field of view (WFOV) and $\frac{1}{4}$ centimeter for HWTS narrow field of view (NFOV).

Evaluation Preparation: Setup: At the test sight, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to zero the thermal sight AN/PAS-13 to a caliber .50 M2 machine gun.

GO **NO GO**

Performance Measures

1. Placed the TWS into operation.

GO NO GO

Performance Measures

2. Zeroed the AN/PAS-13 to the caliber .50 M2 machine gun.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 11-5855-309-12&P

Engage Targets With a Caliber .50 Machine Gun Using an AN/PAS-13 Series Thermal Sight 071-022-0020

Conditions: Given a tripod mounted M2 machine gun with a mounted and zeroed AN/PAS-13 series thermal weapon sight (TWS), linked .50 caliber ammunition, threat targets, and a requirement to engage such targets.

Standards: Detected and determined range to targets. Fired the M2 machine gun to engage targets in assigned sector of fire. Applied marksmanship fundamentals and target engagement techniques so that each target was hit or suppressed.

Performance Steps

1. Place TWS into operation.
2. Assume an appropriate firing position based on situation. This firing position should protect you from enemy fire and observation, yet allow you to place effective fire on targets in your sector of fire.
 - a. Prone position, tripod-supported. Advantages: steady, easy to assume, low silhouette, and easily adapted to use of cover and support. Disadvantages: effectiveness can be limited by terrain and vegetation irregularities.
 - b. Fighting position, tripod-supported. Advantages: best when available.
3. Identify targets in your designated sector of fire.
4. Load the weapon.
5. Acquire targets using TWS reticle.
 - a. Personnel: Place the target on the horizontal line and match its height with one of the vertical lines. Measurement is made from the horizontal line to the top (or bottom) of each vertical line for the range indicated. The vertical line reflects the height of a 5-foot man at the specified range.
 - b. Tank: When viewed from the side, place the left edge of a tank at the left side of the horizontal line. Read the range to the tank from the scale at the right edge of the tank. When viewed from the front or rear, use one half the indicated range value (since width of the tank is approximately half the length of the tank). The horizontal line of a cross hair reflects the width of a 10-foot tank at the specified range.
 - c. The firing aim point of each cross hair is the point of intersection of the vertical and horizontal lines.
6. Fire on target(s) until destroyed, or until you receive an order to cease fire.

Evaluation Preparation: Setup: Evaluate this task on a live fire range; on the Soldier's ability to use correct engagement techniques for specific types of targets. Provide the Soldier with the equipment and materials in the task condition statement.

Brief Soldier: On range safety in accordance with (IAW) installation standing operating procedure (SOP). Tell the Soldier to engage each target.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Placed TWS into operation.	_____	_____
2. Assumed a suitable firing position.	_____	_____
3. Acquired targets.	_____	_____
4. Engaged targets using correct caliber .50 firing techniques.	_____	_____

STP 31-18B34-SM-TG

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
TM 11-5855-309-12&P

Mount an AN/PAQ-4 Series Aiming Light on a Caliber .50 Machine Gun
071-022-0021

Conditions: Given an M2 machine gun, an AN/PAQ-4 series aiming light, an M2 mounting bracket, a bracket adapter, and a requirement to mount the aiming light to the M2.

Standards: Mounted the AN/PAQ-4 securely to the M2 machine gun without damage to equipment.

Performance Steps

1. The aiming light is attached to the M2 machine gun using a bracket adapter and an M2 mounting bracket.

WARNING: Make sure the weapon is CLEAR and on SAFE before proceeding.

2. Release the catch at the left side of the cartridge cover and raise the cover to the UP position.
3. Position the M2 mounting bracket assembly over the breech of the machine gun and slide it to the rear until it stops beyond the rear edge of the breech.
4. Swing the three locking cams to the rear to secure the bracket to the weapon (side cam first, followed by two top locking cams).
5. Close the cartridge cover and secure with the catch.
6. Secure the bracket adapter to the underside of the aiming light.
7. Place the bracket adapter into the M2 bracket mounting groove with the rear of the adapter flush with the rear of the bracket. Hand-tighten the bracket's lever screw into the bracket adapter hole.
8. For infrared aiming light (IAL) momentary "ON" operation, connect the cable switch to the rear of the aiming light.

WARNING: Route the cable so it does not interfere with any moving parts on the weapon, does not block ammunition feed or ejection ports, and does not get snagged by branches.

9. Wrap the cable around the bracket adapter to provide sufficient cable length to secure the cable switch using cable hangers (or adhesive tape) to secure the cable to the weapon.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to mount the AN/PAQ-4 on the caliber .50 M2 machine gun.

Performance Measures

GO **NO GO**

- | | | |
|--|-------|-------|
| 1. Checked to ensure the weapon is clear. | _____ | _____ |
| 2. Installed the AN/PAQ-4 on the Caliber .50 M2 machine gun. | _____ | _____ |

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
TM 11-5855-301-12&P

Dismount an AN/PAQ-4 Series Aiming Light From a Caliber .50 Machine Gun
071-022-0022

Conditions: Given an M2 machine gun with a mounted AN/PAQ-4 series aiming light, and a requirement to dismount the aiming light from the machine gun.

Standards: Dismounted the AN/PAQ-4 from the M2 machine gun without damage to equipment.

Performance Steps

1. Dismounting the AN/PAQ-4 from the M2.

WARNING: Do not store the AN/PAQ-4 with batteries installed.

- a. Remove the Cable Switch from the weapon.
- b. Unscrew the lever assembly by turning it counterclockwise and remove the AN/PAQ-4 from the mounting bracket. Use an empty cartridge case placed over the lever arm for increased leverage if necessary.
- c. Remove the mounting bracket from the machine gun.
- d. Remove the M2 mounting bracket by unlocking the three cams (two top locking cams, then the side cam).
- e. Close the cartridge cover, placing it in the DOWN position.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to remove the AN/PAQ-4 from the caliber .50 M2 machine gun.

Performance Measures

1. Ensured the weapon is clear.
2. Removed the AN/PAQ-4 from the weapon.
3. Stowed the AN/PAQ-4 and components.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 11-5855-301-12&P

Zero an AN/PAQ-4 Series Aiming Light to a Caliber .50 Machine Gun
071-022-0023

Conditions: Given an M2 machine gun, an AN/PAQ-4 series aiming light, an M2 mounting bracket, a bracket adapter, and a requirement to mount the aiming light to the M2.

Standards: The machine gun was zeroed when five out of six rounds from two consecutive shot groups are within the designated strike zone with no damage or injury to personnel or equipment.

Performance Steps

- 1. Boresight the AN/PAQ-4 to the M2.
 - a. Check the alignment of the bore light.
 - (1) Place the appropriate mandrel with the bore light attached in the muzzle of the weapon.
 - (2) Turn on the bore light so that the laser dot strikes the target (offset) ten meters away.
 - (3) Slowly rotate the bore light one half turn (180 degrees) while watching the dot made by the laser on the target area.
 - (4) If the dot remains stationary, the laser is bore sighted.
 - (5) If the dot rotates in a circle the windage or elevation or both must be adjusted until the dot remains stationary or rotates on itself no more than 1 centimeter.

NOTE: One click equals one square on the 25-meter target.

- 2. Zeroing.
 - a. Choose the appropriate strike zone, and draw it on the 25-meter zero target. Fire a total of three rounds (one at a time) before triangulating the shot group. Once the weapon is zeroed on the 25-meter zero range, follow the procedures outlined below for the field zeroing to obtain an accurate zero:
 - (1) Prepare the sight for field zeroing and check the sight. The preferred range is 300 meters. Assume a good bipod-supported position. Fire a six to nine round burst at the target.

NOTE: The burst pattern on the ground in relation to the target.

- (2) Correct for windage (if rounds are impacting to the right or left of the target).

NOTE: That each click of the windage knob sight moves the group on the target mil (1/2 mil equals 6 inches at 300 meters or 10 inches at 500 meters).
 - (3) Correct for elevation (if rounds are impacting over or short of the target).
 - (4) After making corrections on the sight, fire a confirming burst. If the target is not hit with the confirming burst, repeat the above procedures. Treat each subsequent burst as if it were the initial burst.

NOTE: If the adjustment screws are turned too far they will break. If the laser is side-mounted the elevation and windage knobs switch roles.

Evaluation Preparation: Setup: AT the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Solder: Tell the Soldier to zero the AN/PAQ-4 to the caliber .50 M2 machine gun.

Performance Measures	GO	NO GO
1. Placed the AN/PAQ-4 into operation.	_____	_____
2. Zeroed the AN/PAQ-4 to the caliber .50 M2 machine gun.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

STP 31-18B34-SM-TG

**References
Required**

Related
TM 11-5855-301-12&P

Engage Targets With a Caliber .50 Machine Gun Using an AN/PAQ-4 Series Aiming Light
071-022-0024

Conditions: Given a zeroed M2 machine gun with a mounted AN/PAQ-4 series aiming light and ammunition, and engageable targets in your assigned sector of fire.

Standards: Fired the M2 machine gun to engage targets in your assigned sector of fire. Applied the correct M2 machine gun target engagement techniques so that each target is hit.

Performance Steps

- 1. Target engagement during limited visibility.

NOTE: Although the same four fundamentals of marksmanship are used night firing, adjustments must be made to accommodate the night vision devices.

- a. Gunners should engage targets only when they can identify the targets, unless ordered to do otherwise. For example, if one gunner detects a target and engages it, the other gunner observes the area fired upon and adds his fire only if he can identify the target or if ordered to fire.
- b. Tracer ammunition helps a gunner engage targets during limited visibility and should be used, if possible. If firing unaided, gunners must be trained to fire low at first and adjust upward. This overcomes the tendency to fire high.
- c. When two or more gunners are engaging linear targets, linear targets with depth, or deep targets, they do not engage these as they would when visibility is good. With limited visibility, the center and flanks of these targets may not be clearly defined; therefore, each gunner observes his tracers and covers what he believes to be the entire target.

Evaluation Preparation: Setup: Evaluate this task on a live fire range. Evaluate the Soldier's ability to use correct engagement techniques to engage specific types of targets. Provide the Soldier with the equipment and materials in the task condition statement.

Brief Soldier: On range safety, in accordance with (IAW) installation standing operating procedures (SOP). Tell him you are evaluating his ability to place effective fire on targets using the AN/PAQ-4 equipped caliber .50 machine gun.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Placed the AN/PAQ-4 into operation.	_____	_____
2. Assumed a suitable firing position.	_____	_____
3. Acquired targets.	_____	_____
4. Engaged targets using correct caliber .50 firing techniques.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
TM 11-5855-301-12&P

Mount a Night Vision Sight AN/TVS-5 on an MK19 Machine Gun **071-030-0016**

Conditions: Given an MK19 machine gun; MK64 gun cradle; traverse and elevation (T&E) mechanism, mounted on a vehicle or the M3 tripod; M2 mounting bracket, and night vision sight AN/TVS-5.

Standards: Mounted the night vision sight AN/TVS-5 securely on the MK19 without damage to equipment.

Performance Steps

1. Mount the M2 mounting bracket on the MK19.
 - a. Slide the M2 mounting bracket over the rear sight housing from the muzzle end of the gun.
- NOTE: You must lock the locking cams in sequence.
 - b. Lock the M2 mounting bracket locking cams by swinging them to the rear.
 - (1) Lock the side cam.
 - (2) Lock the left top cam.
 - (3) Lock the right top cam.
2. Mount the AN/TVS-5 on the M2 mounting bracket.
 - a. Position the AN/TVS-5 on the mounting bracket in the groove at the top rear of the mounting bracket so that the scribe line on the bracket is aligned with the scribe line on the sight mounting adapter.
 - b. Insert the lever screw from the bottom of the bracket into the sight mounting bracket.
 - c. Tighten the lever screw.

Evaluation Preparation: Setup: A mounted MK19, an AN/TVS-5, and an M2 mounting bracket is required at each test site.

Brief Soldier: Tell the Soldier to mount the AN/TVS-5 on the MK19.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Mounted the M2 mounting bracket on the MK19.	_____	_____
2. Mounted the AN/TVS-5 on the M2 mounting bracket.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References **Required**

Related
 FM 23-27
 TM 11-5855-214-10

Dismount a Night Vision Sight AN/TVS-5 From an MK19 Machine Gun
071-030-0017

Conditions: Given an MK19 machine gun with a mounted night vision sight AN/TVS-5.

Standards: Removed the night vision sight AN/TVS-5 and mounting bracket from the MK19 without damage to equipment.

Performance Steps

- 1. Remove the lever screw.
- 2. Remove the AN/TVS-5 from the mounting bracket.
- 3. Unlock the mounting bracket locking cams in sequence.
 - a. Unlock the right top cam.
 - b. Unlock the left top cam.
 - c. Unlock the side cam.
- 4. Remove the mounting bracket from the MK19.

Evaluation Preparation: Setup: An MK19 with a mounted night vision sight AN/TVS-5 is required at each test site.

Brief Soldier: Tell the Soldier to dismount the AN/TVS-5 from the MK19.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Removed the lever screw.	_____	_____
2. Removed the AN/TVS-5 from the mounting bracket.	_____	_____
3. Unlocked the mounting bracket locking cams in sequence. <ul style="list-style-type: none">a. Unlocked the right top cam.b. Unlocked the left top cam.c. Unlocked the side cam.	_____	_____
4. Removed the mounting bracket from the MK19.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	FM 23-27
	TM 11-5855-214-10

Zero a Night Vision Sight AN/TVS-5 to an MK19 Machine Gun **071-030-0018**

Conditions: Given an MK19 machine gun mounted on an M3 tripod with traverse and elevation (T&E) mechanism, night vision sight AN/TVS-5, optical boresight, stationary targets at known distances (1,000 inches and 500 to 700 meters) from the firing position, linked 40-mm grenade ammunition, and a requirement to zero the AN/TVS-5 to the MK19 machine gun.

Standards: The AN/TVS-5 is adjusted so that correct sight alignment, used the range mark on the AN/TVS-5 sight reticle to aim at a selected target caused a round to impact on or within 3 to 5 meters of the target.

Performance Steps

1. Use the optical boresight to zero an AN/TVS-5 to an MK19.
 - a. Place a target in front of the weapon at 1,000 inches.
 - b. Remove the flash suppressor and install the optical boresight in the muzzle of the barrel.
 - c. Mount the AN/TVS-5 and place it into operation.
 - d. Align the weapon so that the optical boresight is oriented on the aim point of the target.
 - e. Sight through the AN/TVS-5 and adjust the azimuth and elevation adjustment actuators on the AN/TVS-5 so that the 100-meter range mark and the optical boresight are aligned on the same point of aim.
 - f. Remove the optical boresight and install the flash suppressor.
 - g. To verify the zero, select a target of known range past 400 meters. Fire several rounds and tighten the mounting bracket and lever screw, then fire on the target and make adjustments to the sight until the target can be hit.
2. Use the weapon daylight sights to zero an AN/TVS-5 to an MK19.
 - a. Select a target of known range (500 to 700 meters).
 - b. Set the known range on the weapon sight range scale, and set the windage scale at zero.
 - c. Align the weapon on the target.
 - d. Without disturbing weapon alignment, lower the daylight sights.
 - e. Mount the AN/TVS-5 and place it into operation.
 - f. Sight through the AN/TVS-5 and adjust the azimuth and elevation adjustment actuators so that the correct range mark (known range to target) on the sight is aligned on the target.
 - g. To verify the zero, fire several rounds and tighten the mounting bracket and lever screw, then fire on the target and make adjustments to the sight until the target can be hit.

Evaluation Preparation: Setup: A MK 19 with T&E mechanism and feed throat assembly, tripod mounted with the M36A2 ring mount with M66 ring, is required at each test station.

Brief Soldier: Tell the Soldier to zero a night vision sight to the MK19.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Placed the AN/TVS-5 into operation.	_____	_____
2. Zeroed the MK19 with the AN/TVS-5.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-27

Engage Targets With an MK19 Machine Gun Using a Night Vision Sight AN/TVS-5

071-030-0019

Conditions: During darkness, given an MK19 machine gun equipped with night vision sight AN/TVS-5 and mounted on an M3 tripod or vehicle carrier, linked 40-mm grenade ammunition, targets at engageable ranges, targets that could be likely enemy locations (woodlines, hedgerows, buildings), and a requirement to engage such targets.

Standards: Targets were destroyed, disabled, or neutralized.

Performance Steps

1. Assume a firing position.
2. Sight through the night vision sight and determine range to the target.
3. Based on range to the target, place the correct aiming point on the target.
4. Lay the weapon on the target using correct sight alignment, correct sight picture, and the following engagement techniques:
 - a. Linear targets. Lay the gun on center mass of the target and use traversing fire to cover the target area.
 - b. Linear targets with depth. Lay the gun on the center mass of the target. Use traversing and searching fire to cover the target area, covering the side closest to the gun position first.
 - c. Deep targets. Lay the gun on the center mass of the target area. Search down to the near end and then up to the far end.
5. Adjust fire by observing the strike of projectiles in the target area.

Evaluation Preparation: Setup: A MK19 with traverse and elevation (T&E) mechanism and feed throat assembly, tripod mounted with the M36A2 ring mount with M66 ring, is required at each test station.

Brief Soldier: Tell the Soldier to place night vision sight into operation and engage targets with the MK19.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Placed AN/TVS-5 into operation.	_____	_____
2. Assumed a suitable firing position.	_____	_____
3. Acquired targets.	_____	_____
4. Engaged targets using correct MK19 firing techniques.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References Required

Related
FM 23-27
TM 9-1010-230-10

Operate a Night Vision Sight AN/TAS-5**071-052-0005**

Conditions: During darkness, given a night vision sight AN/TAS-5, an M222 round, a coolant cartridge, and a nightsight battery.

Standards: The sight is prepared for operation and correctly mounted on the M222 round without equipment damage.

Performance Steps

1. Prepare the night tracker to use.
 - a. When removing the tracker from the rucksack, hold it by the firing mechanism.
 - b. Install the coolant cartridge.
 - (1) Locate the actuator switch on the right side of the coolant gage. This switch has four positions (Figure 1). A decal on top of the tracker shows these positions.

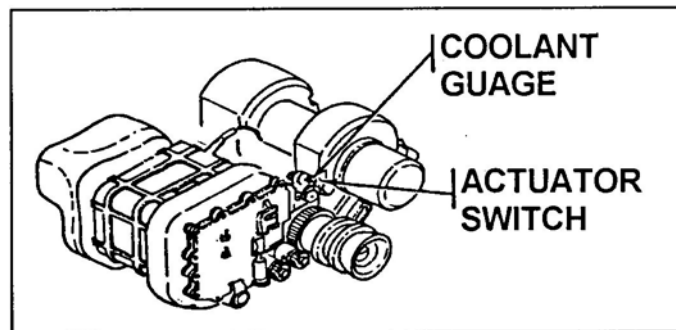


Figure 1. Coolant Gauge and Actuator Switch

CAUTION: A coolant cartridge must always be installed on the night tracker except during cartridge exchange.

- (2) Place the actuator switch straight out. This is the RELEASE position (Figure 2).

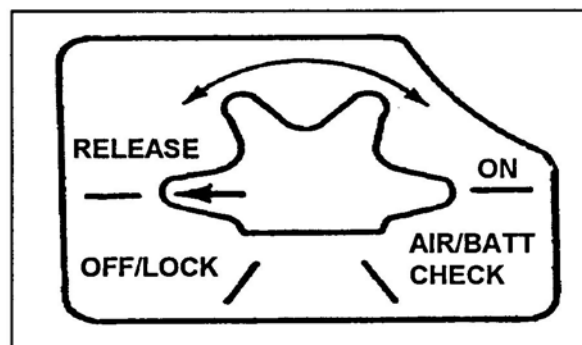


Figure 2. Night Tracker Actuator Switch

- (3) Remove the coolant cartridge from the actuator assembly (Figure 3).

Performance Steps

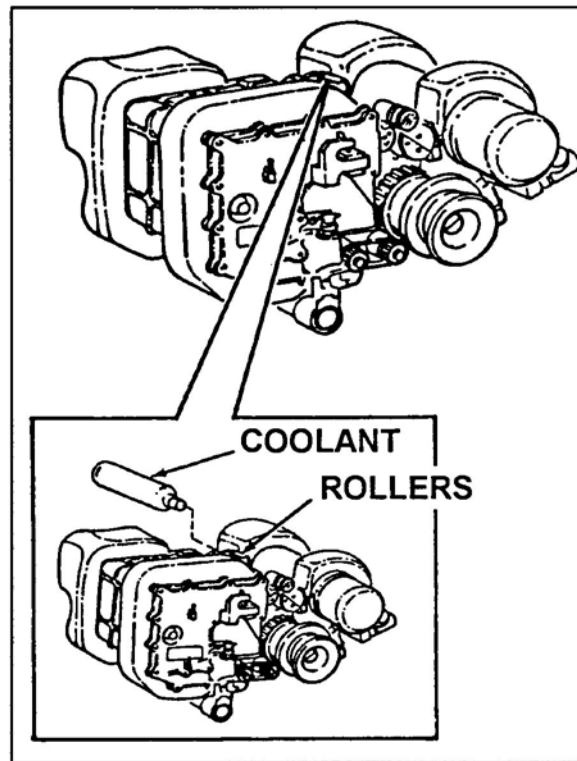


Figure 3. Removal and Installation of the Coolant Cartridge

NOTE: Return all empty coolant cartridges to the unit supply for recharging.

- (4) Slide the new coolant cartridge in from the front of the night tracker, under the rollers, and back into the actuator assembly. While holding the cartridge in place, rotate the actuator switch counterclockwise to the first click. This is the OFF/LOCK position (Figure 4).

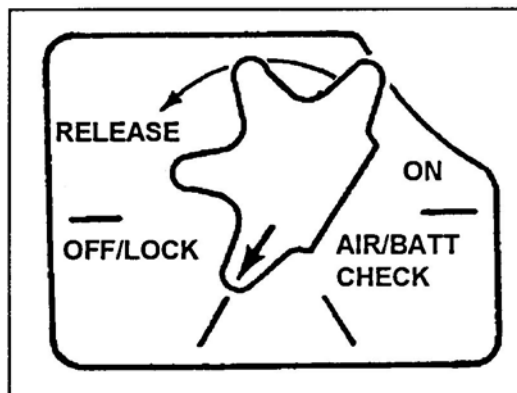


Figure 4. Loading of the Coolant Cartridge

c. Install the battery.

- (1) Move the battery retainer clip to the open position (Figure 5).

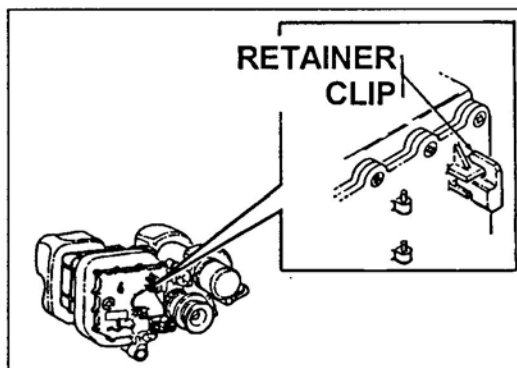
Performance Steps

Figure 5. Battery Retainer Clip

- (2) Align the battery over the battery guide pins (A, Figure 6).

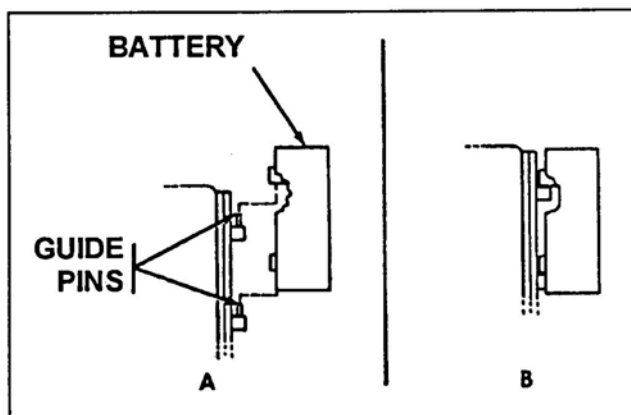


Figure 6. Battery Guide Pins

- (3) Slide the battery down onto the guide pins until the battery connector seats properly (B, Figure 6).
- (4) Move the battery retainer clip over the battery into the closed position (Figure 7).

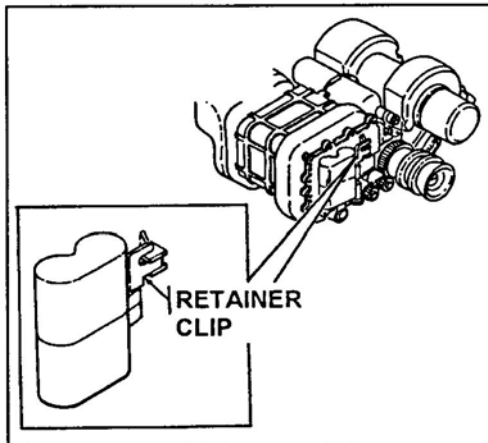


Figure 7. Closing of the Battery Retainer Clip

Performance Steps

2. Perform operational checks.
 - a. Rotate the actuator switch counterclockwise from the OFF/LOCK position to the AIR/BATT CHECK position (Figure 8).

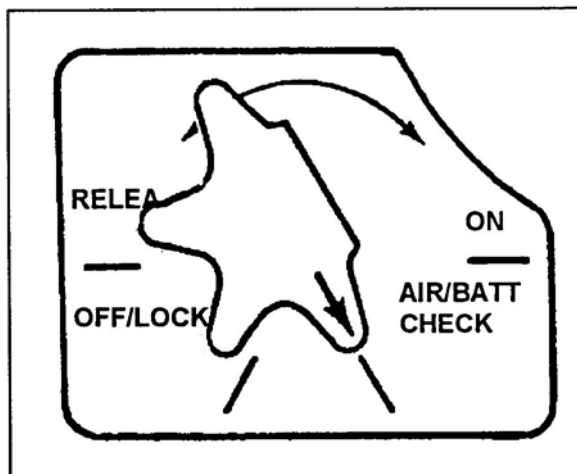


Figure 8. Actuator Switch

- b. Observe the coolant pressure gauge. The gauge indicates from 1,000 pounds per square inch (PSI) to 8,000 PSI. If the gauge reads less than 2,500 PSI, replace the coolant cartridge (Figure 9).

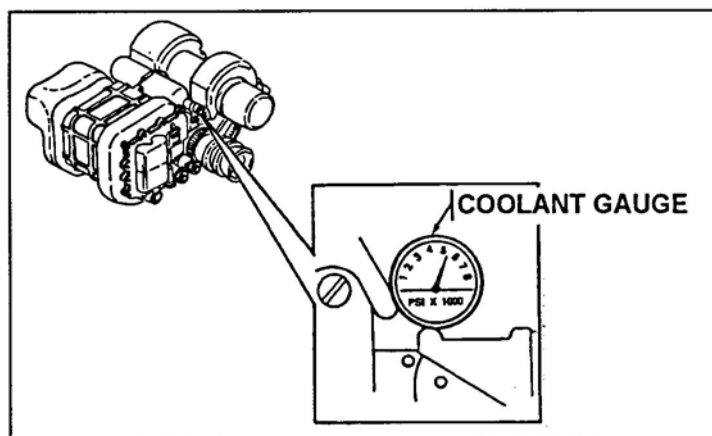


Figure 9. Coolant Pressure Gauge

- c. Put an eye to the eyepiece. If the e coolant cartridge monitor light comes on, replace the coolant cartridge.

NOTE: A security shutter is molded into the eyepiece to prevent light from being emitted from the tracker. The shutter opens when the eye is pressed against the eyecup.

- d. Remove the lens cover and secure it to the hook-pile tape strip on top of the tracker's front shock absorber.
 - e. Move the actuator switch to the ON position and wait 15 seconds for cool down. Sight through the eyepiece and aim the night tracker on a scene with infrared contrast.
 - f. Turn the reticle adjust ring for the best focus of the reticle (Figure 10).

Performance Steps

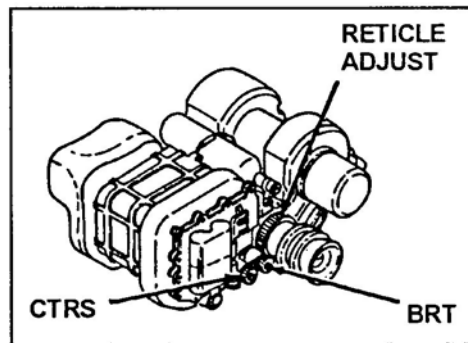


Figure 10. Reticle, Brightness, and Contrast Controls

- g. Adjust the brightness and contrast controls for best viewing.
- h. Adjust the range focus lever for the sharpest image (Figure 11).

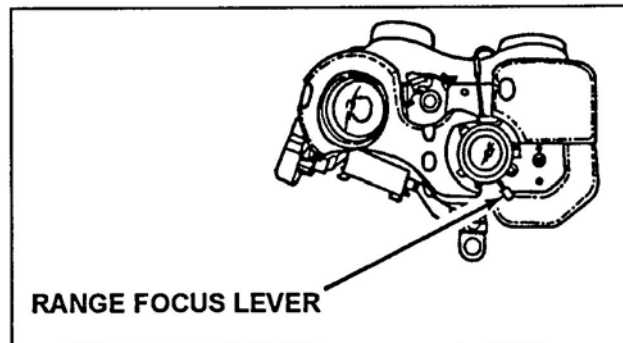


Figure 11. Range Focus Lever

- i. Turn the actuator switch to the OFF/LOCK position and replace the lens cover.
3. Mate the night tracker to the round.
 - a. Remove the connector cover from the connector on the night tracker.
 - b. Remove the connector cover from the connector on the round.
 - c. Place the tracker guide pins in the slots of the tracker bracket guide rails on the round.
- WARNING:** Do not press the safety or the trigger while mating the tracker to the round.
- d. Slide the tracker firmly to the rear, using both hands until the spring clip locks the guide pins in place.
 - e. Remove the lens cover and secure it to the hook-pile tape strip.
 - f. The night tracker is ready to use.

Evaluation Preparation: Setup: At the test site, provide two coolant cartridges, each containing over 2,500 PSI; a battery; a night tracker; and an expanded round. Tell the Soldier that he is to replace the coolant cartridge.

NOTE: Test personnel are responsible for removing the tracker from the round, the battery from the tracker, and for returning the tracker to the rucksack. The tracker and round are in the same starting condition for each Soldier tested.

Brief Soldier: Tell the Soldier to place the night tracker into operation and mate the tracker to the round.

Performance Measures

1. Prepare a night tracker.

GO NO GO

Performance Measures	<u>GO</u>	<u>NO GO</u>
<ul style="list-style-type: none"> a. Replace the coolant cartridge. b. Install the battery. 		
2. Perform operational checks. <ul style="list-style-type: none"> a. Check coolant pressure. b. Check battery and coolant monitor lights. c. Adjust reticle. d. Adjust the brightness and contrast. e. Adjust the range focus. f. Replace the lens cover. 	_____	_____
3. Mate the tracker to the round. <ul style="list-style-type: none"> a. Remove the connector covers on the tracker and round. b. Secure tracker to the guide rails on the round. 	_____	_____
4. Acquire target by adjusting the sight controls without damaging the equipment.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier scores NO-GO, show him what was done wrong and how to do it correctly.

**References
Required**

Related
TM 9-1425-484-10

Mount a Night Vision Sight AN/PVS-4 on an M4 or M4A1 Carbine
071-100-0009

Conditions: Given a cleared M4 or M4A1 carbine, night vision sight AN/PVS-4 with storage case, one battery BA-5567/U (or two BA-3058 with AA battery adapter), expended cartridge case, and mounting knob assembly.

Standards: Secured night vision sight AN/PVS-4 to the M4 or M4A1 carbine so that it was stable and could be used to effectively engage targets without damage to equipment.

Performance Steps

- 1. Check to ensure carbine is clear and the selector lever is on SAFE.
- 2. Inspect AN/PVS-4 sight and components.
 - a. Visually inspect equipment for completeness, obvious damage, or missing parts.
 - (1) Mounting knob assembly. Check for stripped threads, missing nuts, or washers.
 - (2) Batteries. Check for corrosion.
 - (3) AN/PVS-4 sight. Check controls for proper operation.
 - b. If serviceability is questionable, return to maintenance personnel as nonoperational.
- 3. Install night vision sight AN/PVS-4 on the carbine.
 - a. Position the night vision sight AN/PVS-4 in the groove on top of carbine carrying handle.
 - b. Align the threaded hole in the base of the sight-mounting adapter over the hole in the handle.
 - c. Insert the threaded end of mounting knob assembly through the hole in the carrying handle; turn the mounting knob clockwise until it is screwed firmly into the sight-mounting adapter.
 - d. Ensure night vision sight AN/PVS-4 is mounted securely. Try to move it back and forth. If the night vision sight AN/PVS-4 moves, tighten the mounting knob assembly. Use an empty cartridge case placed over the lever arm of the mounting knob to tighten, if necessary. Be careful not to overtight.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task condition statement.

Brief Soldier: Tell the Soldier to mount the night vision sight AN/PVS-4 on an M4 or M4A1 carbine.

Performance Measures	GO	NO GO
1. Checked to ensure carbine is clear and the selector lever is on SAFE.	—	—
2. Inspected AN/PVS-4 sight and components.	—	—
3. Installed night vision sight AN/PVS-4 on the carbine.	—	—

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	TM 9-1005-319-10

Dismount a Night Vision Sight AN/PVS-4 From an M4 or M4A1 Carbine **071-100-0010**

Conditions: Given an M4 or M4A1 carbine with a mounted night vision sight AN/PVS-4, expended cartridge case, and carrying bag. The night vision sight AN/PVS-4 is in the off position, with batteries installed.

Standards: Removed night vision sight AN/PVS-4 from the carbine without damage to equipment. Stowed night vision sight AN/PVS-4, battery/batteries, and mounting knob assembly in correct place in carrying case.

Performance Steps

1. Check to ensure carbine is clear and the selector lever is on SAFE.
2. Remove AN/PVS-4 nightsight.
 - a. Secure AN/PVS-4 nightsight with one hand to prevent it from falling when mounting knob assembly is removed.
 - b. Rotate the mounting knob assembly counterclockwise until the assembly is free. (Use an empty cartridge case placed over the lever arm of the mounting knob to loosen, if necessary. Be careful not to damage the knob or sight.)
 - c. Remove the mounting knob assembly and AN/PVS-4 nightsight from the carbine.
3. Stow AN/PVS-4 nightsight and components.
 - a. Ensure ON-OFF TUBE BRIGHTNESS and ON-OFF/RETICLE BRIGHTNESS controls are at OFF position.
 - b. Ensure objective lens cover is installed.
 - c. Remove the batteries and battery adapter. Replace battery cap.
 - d. Stow the AN/PVS-4 nightsight battery adapter and batteries in the carrying case.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task condition statement.

Brief Soldier: Tell Soldier to dismount the AN/PVS-4 from an M4 or M4A1 carbine.

Performance Measures

1. Checked to ensure carbine is clear and the selector level is on SAFE.
2. Removed AN/PVS-4 nightsight.
3. Stowed AN/PVS-4 nightsight and components.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 11-5855-213-10

Zero a Night Vision Sight AN/PVS-4 to an M4 or M4A1 Carbine
071-100-0011

Conditions: Given a night vision sight AN/PVS-4 mounted on an M4 or an M4A1 carbine on a bipod, M16 magazine with 5.56-mm ammunition, and an M4 zeroing target located 25 meters from the firing point.

Standards: Adjusted controls on night vision sight AN/PVS-4 so that the center of a three-round shot group, when fired from the carbine, would hit five 7-centimeter squares directly below the target aim point.

Performance Steps

1. Place night vision sight AN/PVS-4 into operation.
NOTE: The night vision sight AN/PVS-4 may be zeroed during daylight or darkness. If done during daylight, the daylight cover must be used.
2. Adjust sight reticle aiming point so that the reticle aiming point is roughly in the center of the field of view of the night vision sight AN/PVS-4.
3. Establish a three-round shot group.
 - a. Assume a supported firing position 25 meters from the target.
 - b. Load the weapon and fire at least three rounds downrange to seat the sight on the weapon. Check to ensure the sight is stable. Retighten the mounting knob, if necessary.
 - c. Align the zeroing range aiming point of the reticle on the target aiming point. Fire three-round shot groups until the shot group is 4 centimeters or less in diameter.
4. Make sight adjustments for correct zero.
 - a. Locate the center of the shot group.
NOTE: Each click of the azimuth or elevation adjustment actuator moves the strike of the round 0.25 inches (.63 centimeters or 2500 mil) at 25 meters range. Two clicks of adjustment will move impact of the round approximately one square on the target at 25 meters range.
 - b. Adjust the night vision sight AN/PVS-4 reticle to move the center of the shot group a distance of 7 centimeters (five squares on the target) directly below the target aiming point.
 - c. Fire a three-round shot group to confirm the zero. If necessary, repeat steps 4a and 4b until you zero the weapon.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task conditions and standards. Also provide a bipod for the rifle.

Brief Soldier: Tell the Soldier to zero the AN/PVS-4 sight to an M4 or M4A1 carbine with 18 rounds or less.

Performance Measures	GO	NO GO
1. Placed night vision sight AN/PVS-4 into operation.	_____	_____
2. Established a 3-round shot group	_____	_____
3. Made sight adjustments for correct zero.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	TM 11-5855-213-10

Engage Targets With an M4 or M4A1 Carbine Using a Night Vision Sight AN/PVS-4 071-100-0012

Conditions: Given an M4 or M4A1 carbine with a mounted night vision sight AN/PVS-4 equipped with an M16 sight reticle that has been zeroed and placed into operation; magazines loaded with 5.56-mm ammunition; engageable threat targets; a requirement to engage such targets.

Standards: Detected and determined range to targets. Fired the M4 or M4A1 carbine to engage targets in the assigned sector of fire. Applied correct marksmanship fundamentals and target engagement techniques so that each target was hit or suppressed.

Performance Steps

1. Assume an appropriate firing position based on the situation. The firing position should protect you from enemy fire and observation, yet allow you to place effective fire on targets in your sector of fire.
 - a. Foxhole. Advantage: best option when available. Disadvantage: lack of overhead cover.
 - b. Prone. Advantages: steady, easy to assume, low silhouette, and easily adapted to use of cover and support. Disadvantage: effectiveness can be limited by terrain and vegetation irregularities.
 - c. Prone supported. Advantages: steadier than prone. Other advantages are the same as prone. Disadvantage: same as prone.
 - d. Kneeling. Advantages: Good for use when firing from behind something, or when firing from ground that is level or gently sloping upward. Disadvantage: exposure to small arms fire.
 - e. Kneeling supported. Advantages: steadier than kneeling. Other advantages are the same as kneeling. Disadvantage: exposure to small arms fire.
 - f. Standing. Advantages: useful in assault to surprise targets or when other positions are not appropriate. Disadvantages: Instability; also, allows more exposure to small arms fire.
2. Identify targets in your designated sector of fire.
3. Determine range to the target using reticle of night vision sight AN/PVS-4.
 - a. Personnel: Place the target on the horizontal line and match its height with one of the vertical lines. Measure from the horizontal line to the top (or bottom) of each vertical line for the range indicated.
 - b. Tank: When viewed from the side, place the left edge of tank at the left side of the horizontal line. Read the range to the tank from the scale at the right edge of the tank. When viewed from front or rear, use one-half the indicated range value (since width of the tank equals about half the length of the tank).
 - c. Use the small dots arranged horizontally to the right of the reticle center as aiming points for the M4/M4A1 carbines. They are the same as those marked for M16A1/A2 rifles and for the M203, and M79 grenade launchers.
4. Load the weapon and fire on target(s) until destroyed, or until you receive an order to cease-fire.

Evaluation Preparation: Setup: At a live fire range, provide the equipment and materials given in the task condition statement. Turn off the sight after evaluation.

Brief Soldier: Tell the Soldier he must engage all targets and achieve at least 9 hits out of 18 rounds.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Placed the AN/PVS-4 into operation.	_____	_____
2. Engaged targets.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
FM 21-75
FM 23-9
TM 11-5855-213-10

Mount an AN/PAS-13 Series Thermal Sight on an M4 or M4A1 Carbine
071-100-0013

Conditions: Given an M4 or M4A1 carbine; an AN/PAS-13 series thermal weapon sight (TWS) with M4 spacer installed; a carrying case; and batteries.

Standards: Secured TWS to the M4 or M4A1 carbine without damage to equipment so that it was stable and could be used to effectively engage targets.

Performance Steps

1. Check to ensure carbine is clear and the selector lever is on SAFE.
2. Inspect TWS and components.
 - a. Visually inspect equipment for completeness, obvious damage, or missing parts.
 - b. If serviceability is questionable, return to maintenance personnel as nonoperational.
3. Install TWS on an M4 or M4A1 carbine.
 - a. Remove the carbine carrying handle.
 - (1) Loosen the two retaining knobs on the carrying handle.
 - (2) Remove the carrying handle from the rail and stow it safely in carrying case.
 - b. Install TWS.
 - (1) Loosen the knob on the TWS mount interface.
 - (2) Select a slot on the rail for mounting the TWS. You can use any slot as long as the mount interface does not extend over the edge of the rail. The slot selected should also allow you to effectively aim and fire the rifle while sighting through the TWS.
 - (3) Place the bar of the mount interface in the selected slot. Hand tighten the knob until it clicks at least twice.

Evaluation Preparation: Setup: At the test site, provide all the materials and equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to remove the AN/PAS-13 from its storage case and mount it to an M4 or M4A1 carbine.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Checked to ensure carbine is clear and the selector lever is on SAFE.	_____	_____
2. Inspected TWS and components.	_____	_____
3. Installed TWS on an M4 or M4A1 carbine.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-9

Dismount an AN/PAS-13 Series Thermal Sight From an M4 or M4A1 Carbine
071-100-0014

Conditions: Given an M4 or M4A1 carbine with a mounted AN/PAS-13 series thermal weapon sight (TWS); a TWS carrying case with basic issue items. The TWS brightness control switch is at the OFF position, and the battery is installed.

Standards: Removed the TWS from the carbine without damage to equipment. Stowed TWS, battery, and spacer in the correct place in the carrying case.

Performance Steps

1. Check to ensure carbine is clear and the selector lever is on SAFE.
2. Remove the TWS from the carbine.
 - a. Secure the TWS with one hand to prevent it from falling and loosen the knob on the mount until the TWS is free of the rail.
 - b. Remove the sight.
3. Replace the carbine carrying handle.
4. Stow the TWS and components parts.
 - a. Ensure brightness knob is at the OFF position.
 - b. Ensure objective lens cover is closed.
 - c. Remove the battery, close and secure battery door.
 - d. Stow the TWS and battery in their proper compartments in the carrying case.
 - e. Close carrying case.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task condition statement. The task will be performed in an outside environment.

Brief Soldier: Tell Soldier to remove the sight from the M4 or M4A1 carbine. Ensure that the sight is turned off.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Checked to ensure carbine is clear and the selector lever is on SAFE.	_____	_____
2. Removed the TWS from the carbine.	_____	_____
3. Replaced the carbine-carrying handle.	_____	_____
4. Stowed the TWS and components parts.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly

References
Required

Related
 FM 23-9

Zero an AN/PAS-13 Series Thermal Sight to an M4 or M4A1 Carbine
071-100-0015

Conditions: On a range or on terrain suitable for firing small arms, given an AN/PAS-13 series thermal weapon sight (TWS) mounted on an M4 or M4A1 carbine; magazines with 5.56-mm ammunition; a bipod; a cutting tool (knife or scissors); adhesive tape; E-type silhouette or E-type thermal silhouette, and a M16A2 25-meter zeroing target located 25 meters from the firing point.

Standards: Adjusted TWS so that the center of a three-round shot group, when fired from the carbine, would impact the aim point on the zeroing target.

Performance Steps

1. Prepare M16A2 25-meter zeroing target for TWS zero.
 - a. Cut out a hole four squares wide by four squares high from the center of the M16A2 25-meter zeroing target.
 - b. Cut a piece of corrugated cardboard the same size as the M16A2 25-meter zeroing target.
 - c. Measure 1 inch from each side of the cardboard and cut out a rectangle. You should have a 1-inch cardboard frame.
 - d. Tape the cardboard frame to the back of the M16A2 25-meter zeroing target.
 - e. Affix the target to a standard E-type silhouette or E-type thermal silhouette located 25-meters from firing position.
2. Assume a supported firing position and place the TWS into operation.
3. Adjust TWS controls for rounds to impact at desired aim point on 25-meter zeroing target.
 - a. Set field of view (FOV) ring to WIDE position.
 - b. Press and release RETICLE SELECT switch until display shows M16 reticle.
 - c. Use RETICLE ADJUST switch to set azimuth and elevation indicators to zero (000L and 000D).

NOTE: The TWS reticle zeroing aim point is the aim point located between the zeroing aim lines.

- d. Load the carbine and place selector lever on SEMI.
- e. Aim center mass at the 25-meter zeroing target and fire three round shot groups until you obtain a shot group that is 4-centimeters or less in diameter. Check tightness of sight after first 3-round shot group. Tighten if necessary.
- f. Adjust reticle to move center of shot group to the zero point of impact (for the M4 series carbine, the aim point on the target and zero point of impact of the round is the same at 0.0-cm).
 - (1) Determine azimuth and elevation adjustment required to move the center of the shot group to the desired point of impact.

NOTE: At 25-meter range, each increment (one click) of azimuth or elevation moves the strike of the round 1 1/4 centimeter for medium weapon thermal sight (MWTS) wide field of view (WFOV) and 3/4 centimeter for MWTS narrow field of view (NFOV) and HWTS WFOV. However, when calculating for adjustments, use one click of azimuth or elevation to move strike of round one square on the 25-meter zeroing target.

- (2) Use the RETICLE ADJUST switch to adjust reticle position up (U), down (D), left (L) or right (R).
- (3) Fire and adjust reticle until five or six consecutive shots are within desired point of impact.
- (4) Squad leaders weapon. If the sight is mounted on a squad leader's weapon, set FOV ring to narrow (N) position and repeat zero procedures.
- (5) Record setting of azimuth and elevation indicators.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task condition statement. Also provide a bipod for the rifle.

Brief Soldier: Tell the Soldier to zero the AN/PAS-13 sight to the rifle using 18 rounds or less.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Prepared M16A2 25-meter zeroing target for TWS zero.	_____	_____
2. Assumed a supported firing position and placed the TWS into operation.	_____	_____
3. Adjusted TWS controls for rounds to impact at desired aim point on 25-meter zeroing target.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

**Related
FM 23-9**

Engage Targets With an M4 or M4A1 Carbine Using an AN/PAS-13 Series Thermal Sight 071-100-0016

Conditions: Given an M4 or M4A1 carbine with a mounted and zeroed AN/PAS-13 series thermal weapon sight (TWS); loaded magazines with 5.56-mm ammunition; bipod, and threat targets.

Standards: Detected and determined range to targets. Fired the M4 or M4A1 carbine to engage targets in your assigned sector of fire. Applied correct marksmanship fundamentals and target engagement techniques so that each target was hit or suppressed.

Performance Steps

1. Place TWS into operation.
2. Assume an appropriate firing position based on the situation. The firing position should protect you from enemy fire and observation, yet allow you to place effective fire on targets in your sector of fire.
 - a. Foxhole. Advantage: best option, when available. Disadvantage: lack of overhead cover.
 - b. Prone. Advantages: steady, easy to assume, low silhouette, and easily adapted to use of cover and support. Disadvantage: effectiveness can be limited by terrain and vegetation irregularities.
 - c. Prone supported. Advantages: steadier than prone. Other advantages the same as prone. Disadvantage: same as prone.
 - d. Kneeling. Advantages: useful when firing from behind something or when firing from ground that is level or gently sloping upward. Disadvantage: exposure to small arms fire.
 - e. Kneeling supported. Advantages: steadier than kneeling. Other advantages, the same as kneeling. Disadvantage: exposure to small arms fire.
 - f. Standing. Advantages: useful in assault to surprise targets or when other positions are not appropriate. Disadvantages: instability. Also, exposure to small arms fire.
3. Identify targets in your designated sector of fire.
4. Load the weapon.
5. Acquire targets using TWS reticle.
 - a. Personnel: Place the target on the horizontal line and match its height with one of the vertical lines. Measure from the horizontal line to the top (or bottom) of each vertical line for the range indicated.
 - b. Tank: When viewed from the side, place the left edge of tank at the left side of the horizontal line. Read the range to the tank from the scale at the right edge of the tank. When viewed from front or rear, use one-half the indicated range value (since width of the tank is about half the length of the tank.)
 - c. Use the small dots arrayed horizontally to the right of the reticle center as aiming points for the M4/M4A1 carbines. They are the same as those marked for M16A1/A2 rifles, and for the M203 and M79 grenade launchers.
6. Fire on target(s) until destroyed, or until you receive an order to cease-fire.

Evaluation Preparation: Setup: At a live-fire range, provide the equipment and materials given in the task condition statement. Turn off the sight after evaluation.

Brief Soldier: Tell the Soldier to engage all targets with a minimum of 9 hits out of 18 rounds.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Placed TWS into operation.	—	—
2. Assumed an appropriate firing position based on situation. The firing position should protect you from enemy fire and observation, yet allow you to place effective fire on targets in your sector of fire.	—	—

Performance Measures

	<u>GO</u>	<u>NO GO</u>
3. Identified targets in your designated sector of fire.	_____	_____
4. Loaded the weapon.	_____	_____
5. Acquired targets using TWS reticle.	_____	_____
6. Fired on target(s) until destroyed, or until you received an order to cease-fire.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
 FM 21-75
 FM 23-9

Mount an AN/PAQ-4 Series Aiming Light on an M4 or M4A1 Carbine **071-100-0017**

Conditions: Given a cleared M4 or M4A1 carbine; an AN/PAQ-4-series aiming light; an M16 mounting bracket; and an M16A1 barrel adapter.

Standards: Attached and secured the AN/PAQ-4 and M16 barrel adapter to the M4 or M4A1 carbine without damage to equipment.

Performance Steps

1. Clamp the M4 mounting bracket to the barrel of the M4 or M4A1 with the knob on the right, positioning the aiming light vertically on the side of the weapon.
WARNING: Make sure the weapon is clear and on SAFE before proceeding.
 - a. Fully loosen the bracket knob and place the bracket on the M4 carbine, so that the jaws surround the barrel, and so the notch at the rear of the bracket engages the front sight post.
 - b. Hand tighten the knob. Fold down the metal ring.
 - c. Turn the ON/OFF switch counterclockwise (CCW) to the #1 OFF/STORAGE position.
 - d. Position the aiming light on the bracket mounting rail.
2. Hand tighten the thumbscrew to secure the aiming light.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task condition and statement.

Brief Soldier: Tell the Soldier to mount the AN/PAQ-4-series aiming light on an M4 or M4A1 carbine.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Mount AN/PAQ-4 to an M4 or M4A1. <ol style="list-style-type: none"> a. Fully loosened the bracket knob and placed the bracket on the M4 carbine so that the jaws surrounded the barrel, and so that the notch at the rear of the bracket engaged the front sight post. b. Hand tightened the knob. Folded down the metal ring. c. Turned the ON/OFF switch counterclockwise to the #1 OFF/STORAGE position. d. Positioned the aiming light on the bracket mounting rail. 	_____	_____
2. Hand tightened the thumbscrew to secure the aiming light.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References **Required**

Related
 TM 11-5855-301-12&P

Dismount an AN/PAQ-4 Series Aiming Light From an M4 or M4A1 Carbine
071-100-0018

Conditions: Given an AN/PAQ-4-series aiming light mounted on an M4 or M4A1 carbine.

Standards: Removed the AN/PAQ-4 and the M16 barrel adapter from your weapon without damage to equipment or personnel.

Performance Steps

1. Remove the aiming light from the mounting bracket by loosening the thumbscrew.
2. Remove the topmost portion of the mounting bracket by loosening the mounting screws. Set these parts aside.
3. Remove the bracket caps and set them aside with the small screws and washers.
4. Remove the top portion of the mounting bracket.
5. Screw the topmost portion of the bracket back onto the bracket.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials given in the task conditions and statement.

Brief Soldier: Tell the Soldier to dismount the AN/PAQ-4-series aiming light from the M4 or M4AI carbine.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Removed the AN/PAQ-4-series aiming light from the mounting bracket by loosening the thumbscrew.	—	—

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
TM 11-5855-301-12&P

Engage Targets With an M4 or M4A1 Carbine Using an AN/PAQ-4 Series Aiming Light 071-100-0019

Conditions: Given an M4 or M4A1 carbine with a mounted, zeroed AN/PAQ-4 series aiming light, magazines, ammunition, individual combat equipment; stationary or moving targets (personnel) at engageable ranges.

Standards: Detected and determined range to targets. Fired the M4 or M4A1 carbine to engage targets in your assigned sector of fire. Applied correct marksmanship fundamentals and target engagement techniques so that each target was hit or suppressed.

Performance Steps

1. Assume an appropriate firing position based on the situation. The firing position should protect you from enemy fire and observation, yet allow you to place effective fire on targets in your sector of fire.
 - a. Foxhole. Advantage: best option when available. Disadvantage: lack of overhead cover.
 - b. Prone. Advantages: steady, easy to assume, low silhouette, and easily adapted to use of cover and support. Disadvantage: effectiveness can be limited by terrain and vegetation irregularities.
 - c. Prone supported. Advantages: steadier than prone. Other advantages the same as prone. Disadvantage: same as prone.
 - d. Kneeling. Advantages: useful when firing from behind something, or when firing on ground that is level or gently sloping upward. Disadvantage: exposure to small arms fire.
 - e. Kneeling supported. Advantage: steadier than kneeling. Other advantages, the same as kneeling. Disadvantage: exposure to small arms fire.
 - f. Standing. Advantages: useful in assault to surprise targets or when other positions are not appropriate. Disadvantage: exposure to small arms fire.
2. Identify targets in your designated sector of fire.
3. Determine range to a target.
4. Load and fire on targets using appropriate engagement techniques.
 - a. Load the weapon.
 - b. Use the appropriate aiming technique.

NOTE: When operated with the M4, the infrared aiming light (IAL) is activated in the #2 ON MOMENTARY position only.

- (1) Press the ON/OFF switch against the weapon handguard to activate the IAL. The IAL will project an infrared pulsing spot towards the target. The IAL shuts off when pressure on the switch is released.
- (2) Engage the target when the IAL is on the desired point of impact.
- (3) Engage a stationary target using reference points or sighting points.
- (4) Engage a target moving towards you as you would a stationary target.
- (5) Engage a target moving laterally, using the new single-lead technique, by placing the trailing edge of the front sight post at the center of the target. (This method causes the lead to increase automatically as the range increases.)
- (6) Engage multiple targets by first firing at the one presenting the greatest danger (usually the closest), then rapidly proceeding to next target.
- c. Use the quick-fire technique when you do not have time to aim properly. Use this technique on targets within 30 meters of your location. (This technique is most effective in urban terrain or heavy bush.)
 - (1) Use the standing position.
 - (2) Use the raised stockwell. Look 2 or 3 inches above the sights on a plane that is level with the barrel.
 - (3) Look at the target - not at the sights.
- d. Fire on the targets until they are destroyed; or until you receive an order to cease fire.

Evaluation Preparation: Setup: Provide a live-fire range. Provide sufficient quantities of equipment and ammunition to support the number of Soldiers tested. Have each Soldier use his or her own rifle and magazine. You can use a separate range to test the Soldiers on target detection and range determination.

You can train engagement skills using any and all rifle marksmanship training devices such as Weaponeer or Basic Rifle Marksmanship (DVC 07-57). The live-fire evaluation of a Soldier's ability to engage targets requires firing the standard rifle qualification course. You can evaluate this task for the common task test (CTT) along with live-fire on the standard rifle qualification course or during a unit weapons qualification firing cycle.

Brief Soldier: Tell Soldier to detect and engage targets in the assigned sector of fire and, when asked, state the range to the target.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Assumed a position that provides cover, concealment, and good observation.	_____	_____
2. Completed a quick check of your sector within 30 seconds.	_____	_____
3. Detected all stationary and moving targets in your sector using the appropriate search technique with no more than 20 percent error.	_____	_____
4. Determined the range to each target with no more than 20 percent error.	_____	_____
5. Assumed the appropriate combat firing position.	_____	_____
6. Engaged all targets detected using the appropriate firing technique.	_____	_____
7. Hit at least 60 percent of the targets (23 of 40 on the standard qualification course range).	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly. Identify specific things the Soldier can do to improve his or her performance.

References Required

Related
DVC 07-57
FM 21-75
FM 23-9
TM 11-5855-301-12&P

Zero an AN/PAQ-4 Series Aiming Light to an M4 or M4A1 Carbine
071-100-0020

Conditions: Given an AN/PAQ-4 aiming light mounted on an M4 or M4A1 carbine and an M16A2 25-meter zeroing target.

Standards: Zeroed the AN/PAQ-4 to the M4 or M4A1 carbine it was mounted on. Fired the weapon and hit the designated strike zone with two out of three rounds.

Performance Steps

1. Boresight the AN/PAQ-4 to the M4.
 - a. Check the alignment of the bore light.
 - (1) Place the appropriate mandrel with the bore light attached in the muzzle of the weapon.
 - (2) Turn on the bore light so that the laser dot strikes the target (offset) ten meters away.
 - (3) Slowly rotate the bore light one-half turn (180 degrees) while watching the dot made by the laser on the target area. If the dot remains stationary, the laser is boresighted. If the dot rotates in a circle adjust the windage, elevation, or both until the dot remains stationary or rotates on itself no more than 1 centimeter.
 - b. Adjust the bore light (if necessary).
 - (1) Move the target to a distance of two meters.
 - (2) Mark the location of the laser dot.
 - (3) Slowly rotate the bore light one half turn.
 - (4) Note the new location of the laser dot.
 - (5) Adjust the windage and elevation until the laser dot moves halfway back to its original location.
 - (6) Continue the procedure until the laser dot remains stationary (or spins upon itself within 1 centimeter) when the bore light is rotated.
 - (7) Move the target to a distance of ten meters, and recheck the boresight.
 - c. Boresight the AN/PAQ-4 to the M4.
 - (1) Position the weapon so the bore light strikes the small dot on the boresight target.
 - (2) Zero the aiming light by turning both windage and elevation knobs (for the pointer and illuminator) fully clockwise until they stop. Rotate counterclockwise five and a half turns. Align the white dot on the adjuster with the center of the front adjuster flange.
 - (3) Adjust the aiming light until the emitted laser is on the appropriate dot on the boresight target. The weapon is boresighted when the laser bore light is on the small dot and the emitted laser is on the cross.

NOTE: You must use a night vision goggle in order to see the dot from the laser. Bore sight zeroing must be conducted at ten meters.

2. Zeroing.
 - a. When the weapon is sighted precisely center mass of the 25-meter target, the beam looks dimmer. Fire a round.
 - b. Choose the appropriate 25-meter strike zone for the weapon you are using and draw the strike zone on the 25-meter zero target.
 - c. Staple the 25-meter zero target on an E-type silhouette and cut a 4-centimeter square out of the center through both the target paper and the E-type silhouette. Then place the target on the 25-meter range.
 - d. Fire a three- round shot group. Remember to fire when the infrared aiming light's beam goes through the 4-centimeter cut-out in the target (the beam will appear dimmer).
 - e. Triangulate the three-round shot group. Adjust the windage and elevation knobs on the aiming light to move the impact of the rounds to the designated strike zone.
 - f. Repeat Steps 3 and 4 until five out of six rounds from two consecutive shot groups hit within the designated strike zone.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task conditions statement.

Brief Soldier: Tell the Soldier that he must zero the AN/PAQ-4 to an M4 or M4A1 carbine.

Performance Measures

GO **NO GO**

1. Placed the AN/PAQ-4 series aiming light into operation.
2. Zeroed the aiming light to the M4 or M4A1 rifle.

____ ____
____ ____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 21-75
FM 23-9
TM 11-5855-301-12&P

Engage Targets with a Caliber .50 M2 Machine Gun Using a Night Vision Sight AN/TVS-5 071-315-0056

Conditions: Given a caliber .50 M2 machine gun, mounted and zeroed, a night vision sight AN/TVS-5, targets, and a 50-round belt of ammunition with tracers.

Standards: Identified and engaged targets at a range of up to 1,000 meters and placed effective fire on the targets.

Performance Steps

1. Locate target using the AN/TVS-5.
 - a. Look through the eyepiece with the eye focused only on the reticle pattern.
 - b. Adjust the diopter focus ring (Figure 1) until reticle lines appear sharp and clear.
 - c. Focus the objective lens on the desired target by rotating the objective focus ring (Figure 1).

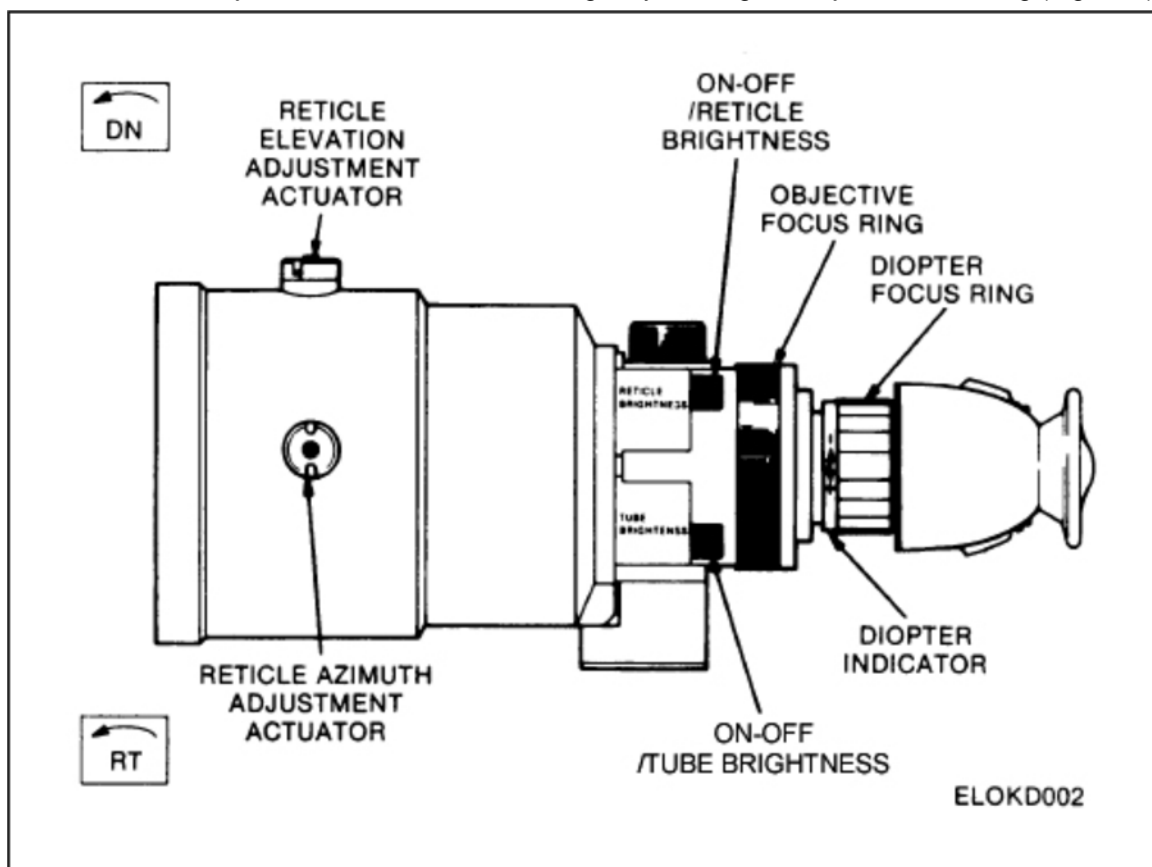


Figure 1. AN/TVS-5

NOTE: When operating the sight at night, care must be taken to be sure the eye is held firmly against the rubber eye shield to prevent light leakage. Light reflected on the operator's face can be seen by the enemy.

2. Engage target using the AN/TVS-5.
 - a. Acquire the target (Step 1).
 - b. Remove your eye from the AN/TVS-5.
 - c. Hold the weapon steady.

Performance Steps

3. Use the burst-on-target method to engage the target.
 - a. Fire a round and note the strike of the round in relation to the target by looking through the AN/TVS-5 after you have fired the tracer.
 - b. Note the point on the sight reticle where the strike appears.
 - c. Move this point onto the center of mass of the target.
 - d. Continue this procedure (Steps 2a through 2d(3)) until you have hit the target.
4. Fire 6- to 10-round bursts.
5. Place effective fire on the targets.

Evaluation Preparation: SETUP: Targets should be set up in depth and clearly identifiable to the gunner and evaluator.

Brief Soldier: Tell the Soldier to engage the target using the burst-on-target method of adjustment and to engage the target using 6- to 10-round bursts.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Located the target using the AN/TVS-5.	_____	_____
2. Adjusted the AN/TVS-5.	_____	_____
3. Adjusted on target using burst-on-target method.	_____	_____
4. Fired 6- to 10-round bursts to engage target.	_____	_____
5. Placed effective fire on target.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-65

TM 11-5855-214-10

Zero a Night Vision Sight AN/TVS-5 to a Caliber .50 M2 Machine Gun
071-315-2317

Conditions: In a combat environment, given a caliber .50 M2 machine gun complete with all components, a target 50 meters from the firing position, the AN/TVS-5 mounted, and caliber .50 ammunition.

Standards: The AN/TVS-5 is zeroed to the caliber .50 M2 machine gun so that the shot group is 9.8 centimeters below the target aiming point.

Performance Steps

1. Zero at 50 meters.
 - a. Place the reticle aiming point on the target aiming point.
 - b. Fire enough rounds to obtain a good shot group.
 - c. Locate the center of the shot group.
 - d. Adjust the reticle to move the shot group 9.8 centimeters, or 7 squares, below the target aiming point.
 - e. Move the weapon so the reticle aiming point is again on the target aiming point.
 - f. Repeat this process until the desired point of impact is obtained.

NOTE: one click of the adjustment actuator will move the reticle one square on the target.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to zero the AN/TVS-5 to the caliber .50 M2 machine gun.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Placed the reticle aiming point on the target aiming point.	—	—
2. Fired enough single-shot rounds to obtain a good shot group.	—	—
3. Located the center of the shot group.	—	—
4. Adjusted the AN/TVS-5 azimuth and elevation adjustment actuators until the shot group impacts 9.8 centimeters, or 7 squares, below the target aiming point.	—	—
NOTE: Each click of the azimuth or elevation adjustment actuator will move the strike of the round 0.5 inch at 50 meters.		
5. Moved the weapon so the reticle aiming point is again on the target aiming point.	—	—
6. Repeated this process until the desired point of impact is obtained.	—	—

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
 FM 23-65
 TM 11-5855-214-10

Zero a Night Vision Sight AN/PVS-4 to an M203 Grenade Launcher

071-315-2351

Conditions: On a firing range, given an M203 with AN/PVS-4 attached, a magazine with 18 rounds of 5.56-mm ammunition, a silhouette target with a 25-meter zero target, sandbags, and a device to measure 9.8 centimeters or 3 7/8 inches.

Standards: Zero the AN/PVS-4 to the M203 so that the AN/PVS-4 reticle is aligned on the target aiming point and the center of the shot group is 9.8 centimeters or 3 7/8 inches below and 4.2 centimeters or 1 5/8 inches to the right of the target aiming point.

Performance Steps

CAUTION: Prolonged use of the sight under high light conditions without a daylight cover will damage the image intensifier assembly.

1. Prepare the sight.

NOTE: The sight may be zeroed during daylight or darkness. If zeroed during daylight, the daylight sight cover must be used. When zeroing or firing at night, ensure the daylight cover is removed.

- Support the weapon in a stable firing position.
- Turn the ON-OFF reticle brightness control clockwise to adjust the light intensity so that the reticle is just visible.
- Turn the diopter focus ring until there is a clear image of the reticle pattern.
- Turn the objective focus ring until the target in the field of view is sharply defined.
- Adjust the azimuth and elevation control until the sight reticle aiming point is approximately in the center of the field of view.

2. Zero the sight.

- Before attempting to zero, fire three M16 rounds to settle the sight on the weapon. Retighten the mounting wing nuts.
- Place the zeroing range aiming point (Figure 1) of the sight reticle on the target aiming point and fire; obtain a good three-round shot group. Locate the center of the shot group.

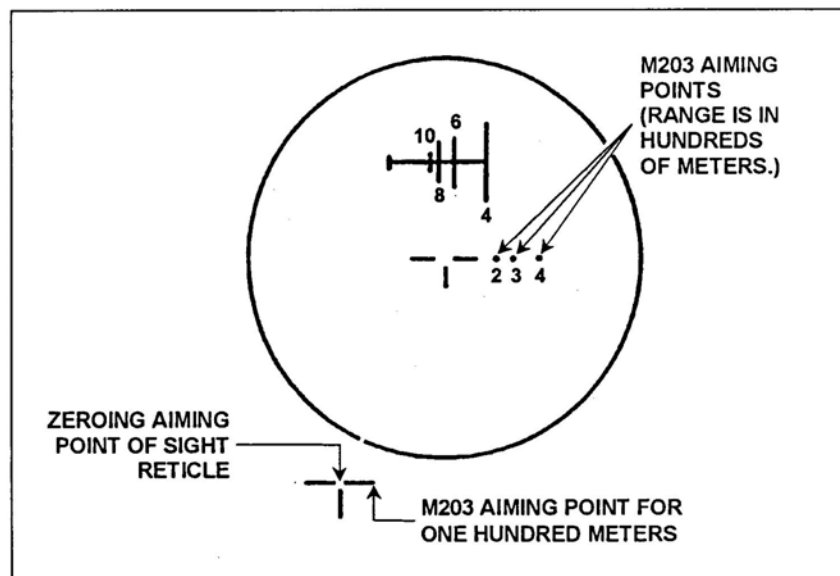


Figure 1. Zeroing Range Aiming Point

Performance Steps

- c. Adjust the sight reticle using the azimuth and elevation control knobs to move the center of the shot group to a point 9.8 centimeters or 3 7/8 inches below and 4.2 centimeters or 1 5/8 inches to the right of the target aiming point (Figures 2 and 3).

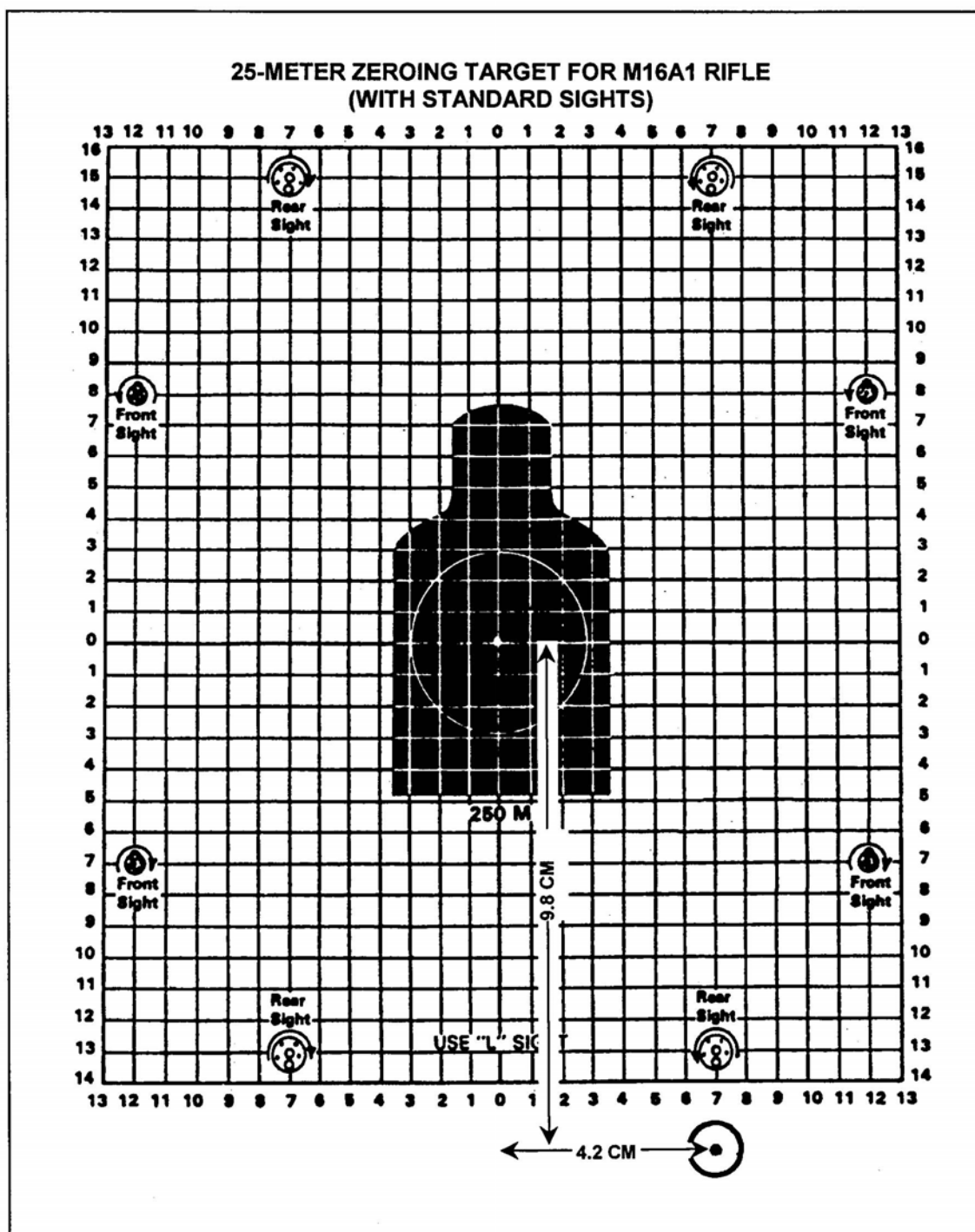


Figure 2. 25-Meter Zeroing Target for M16A1 Rifle

Performance Steps

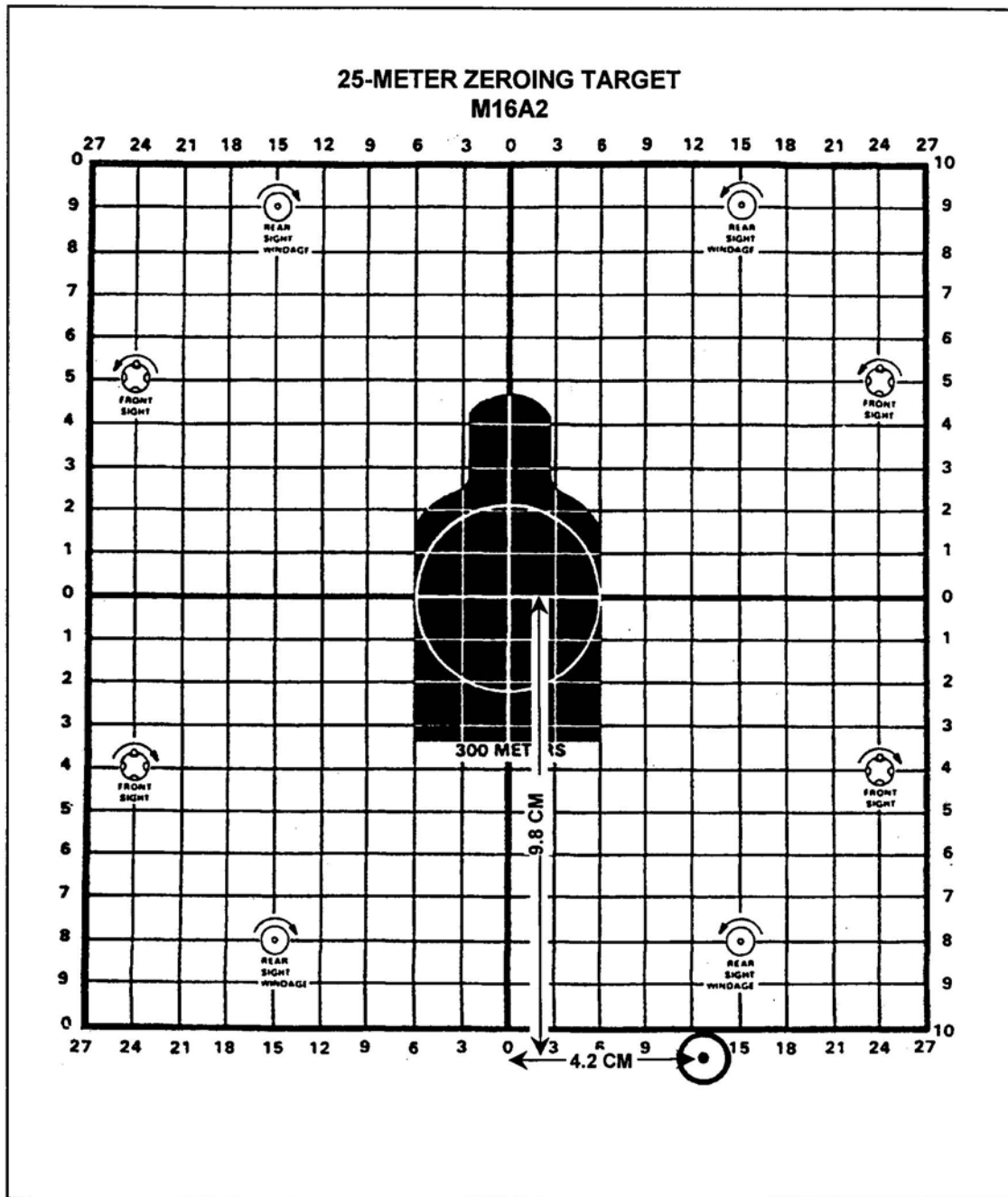


Figure 3. 25-Meter Zeroing Target for M16A2

EXAMPLE: If the shot group is high and to the left of the desired impact point, move the elevation adjustment in the down (DN) direction and the azimuth adjustment in the right (RT) direction.

NOTE: Each click of the azimuth or elevation adjustment moves the strike of the round 0.63 centimeters or 1/4 inch at a range of 25 meters. Two clicks of adjustment move the reticle about one square on the target shown.

Performance Steps

- d. Upon completion of the rifle-zeroing portion of the M203, the grenade launcher is also zeroed for use of the M203 aiming points of the sight reticle (Figure 1) in conjunction with the range settings on the mounting bracket.

EXAMPLE: When firing at a range of 300 meters, set the range scale of the mounting bracket to a range of 300. Then use the middle dot of the sight reticle (3) as the aiming point to place on the target.

Evaluation Preparation: Setup: At the test site, provide all the materials given in the task condition statement and an M203 with an AN/PVS-4 attached.

Brief Soldier: Tell the Soldier to zero the AN/PVS-4 sight in 18 rounds or less.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Prepared the AN/PVS-4 into operation.	_____	_____
2. Fired three rounds to settle the sight.	_____	_____
3. Zeroed the AN/PVS-4 in 18 rounds or less.	_____	_____
4. Placed the AN/PVS-4 out of operation.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-31

TM 11-5855-213-10

Engage Targets With an M203 Grenade Launcher Using a Night Vision Sight AN/PVS-4 071-315-2352

Conditions: During darkness on an M203 range with a target at 200 meters, given a zeroed M203 with an AN/PVS-4 mounted and three rounds of 40-mm ammunition.

Standards: From a prone-supported position, engage a target at 200 meters and place two of the three rounds within 5 meters of the target.

Performance Steps

1. Place sight into operation.
2. Use the sight reticle. The AN/PVS-4 sight reticle consists of two parts when used with the M203 (Figure 1).
 - a. The upper part is used to determine range.
 - b. The lower part is used to aim the weapon.

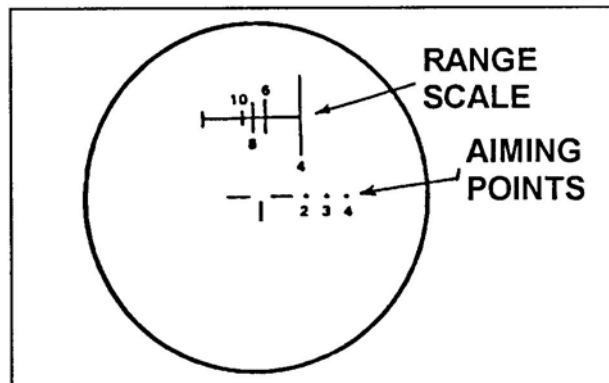


Figure 1. AN/PVS-4 Sight Reticle

3. Determine range. The vertical lines on the range scale show how far away a 6-foot-tall man is.
 - a. Place the figure on the horizontal line and match it with the vertical line (A, Figure 2).
 - b. Read the number at the bottom of the vertical line. That is the distance in hundreds of meters.
 - c. If the figure is the same height as the vertical line above and below the horizontal line, divide the distance in half. In A, Figure 2, the man above the horizontal line is 400 meters away. In B, Figure 2, the man above and below the line is 200 meters away.

Performance Steps

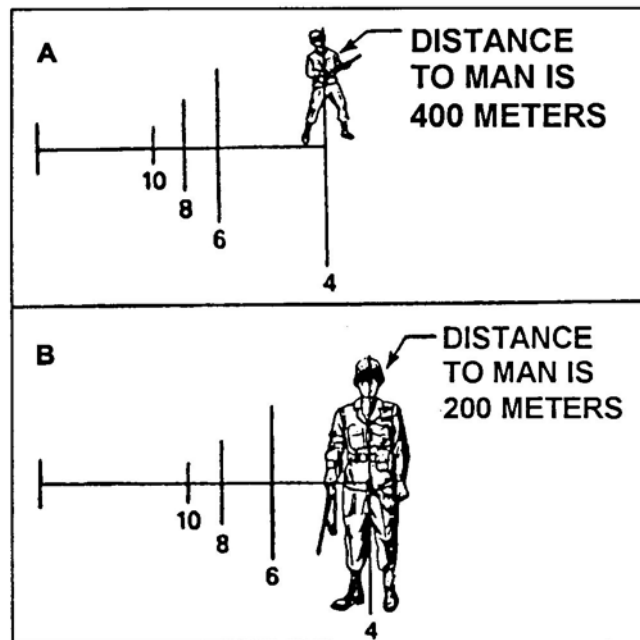


Figure 2. Determining Range

4. Set the range as determined on the range indicator of the mounting bracket (Figure 3).

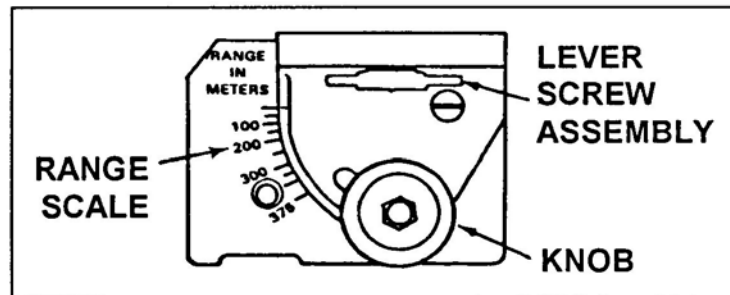


Figure 3. Set Range on Range Indicator

5. Engage the target.
 - a. Place the aiming point of the sight reticle with the number corresponding to the range at the target's center of mass (Figure 4).
 - b. Fire the weapon using all marksmanship skills.

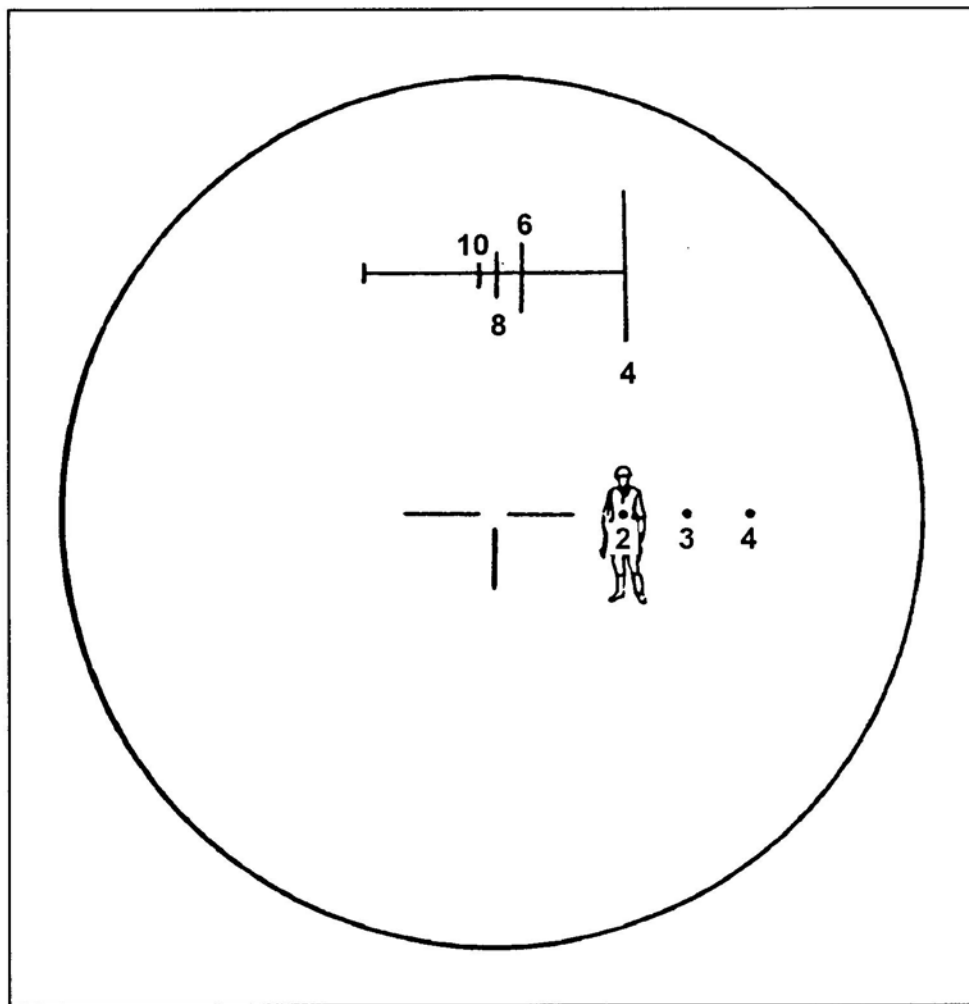
Performance Steps

Figure 4. Aiming Point and Center of Mass

Evaluation Preparation: Setup: At a live-fire M203 range, provide all the materials indicated in the task condition statement. Turn off the sight after the evaluation.

Brief Soldier: Tell the Soldier to engage a target at 200 meters with the M203 grenade launcher (GL) while using an AN/PVS-4.

Performance Measures

1. Placed the AN/PVS-4 into operation.
2. Used the sight reticle to determine range.
3. Set the range on the mounting bracket.
4. Engaged the target and placed two of the three rounds within 5 meters of the target.

GO **NO GO**

STP 31-18B34-SM-TG

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-31

TM 11-5855-213-10

Subject Area 11: AIR DEFENSE SYSTEMS

Perform Hangfire/Misfire Procedures on the Stinger Weapon**441-067-1005**

Conditions: This task is performed after the Stinger weapon round does not fire, with the following available items:

1. Stinger weapon round with battery coolant unit (BCU).
2. Identification, friend or foe (IFF) interrogator.
3. Military map of area.

Standards: This task is accomplished when all performance measures are met and all safety precautions have been observed in the evaluation guide.

Evaluation Preparation: Setup: Give the Soldier a Stinger FHT with a dummy BCU and dummy interrogator. When the Soldier pulls the trigger, announce, "Your weapon failed to fire; take immediate action."

Brief Soldier: Point out the direction of the enemy force and tell the Soldier to prepare the FHT for an engagement and to simulate firing. Have the Soldier determine if he has a hangfire or misfire and explain the difference.

Performance Measures**GO** **NO GO**

DANGER: For a hangfire or misfire missile, personnel not directly involved in missile firings should evacuate the area around the missile for a distance of 670 feet (204 meters). The missile must not be approached for 30 minutes by explosive ordnance disposal (EOD) personnel and 60 minutes for all others. Death or injury may result. The front portion of a hangfire misfire missile may remain hot for up to 60 minutes after the occurrence; proper precautions should be taken in handling the missile-round.

1. Continue to track the target for 5 seconds, keeping both the firing trigger and uncaging switch pressed.

2. Release the firing trigger and uncaging switch.

WARNING: BCU gets extremely hot when activated. Grasp it only by the heat-insulated cap when removing it. DO NOT point top of BCU toward skin because high pressure gas may still be escaping. DO NOT handle the BCU for 30 minutes after removal.

3. Immediately remove the BCU with your left hand.

4. Remove the IFF interconnecting cable from the gripstock.

CAUTION: If at all possible you should move the maximum distance away from the weapon 670 feet (204 meters). If your mission requires you to stay in the area, move at least 50 meters (164 feet) from the weapon. Place the weapon pointed away from your position.

5. Place the weapon on the ground with the front end elevated approximately 20 degrees and 50 meters (164 feet) from the firing position and pointed down range.

6. Mark the location of the weapon so that it can be observed from a safe location.

7. Leave the weapon location without crossing in front or behind of the weapon.

8. Evacuate nonmission required personnel at least 670 feet from the weapon location.

Performance Measures

GO

NO GO

9. Notify EOD of the situation.

10. Keep the weapon under surveillance from a safe position until destroyed.

11. Prevent unauthorized personnel from approaching the weapon.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

FM 44-18-1

TM 9-1425-429-12

Convert a Stinger Missile-Round to a Weapon-Round
441-067-1007

Conditions: This task is performed when the gunner has fired the weapon round and with the following available items:

- 1. Basic load in M416 trailer.
- 2. TL-29 knife.
- 3. Expended weapon round.

Standards: This task is accomplished when the following performance measures in the evaluation guide have been completed and the weapon round is ready to engage targets within 10 minutes.

Evaluation Preparation: Setup: Provide one firing head trainer (FHT) with gripstock and one FHT without, to simulate a weapon-round and missile-round. The Soldier begins the task with the ready-round on his shoulder and the antenna up. The missile-round is located nearby.

Brief Soldier: Tell the Soldier that on your command he is to convert a missile-round to a weapon-round.

Performance Measures	GO	NO GO
CAUTION: When handling the weapon round, be careful not to damage the launch motor igniter leads running lengthwise on the outside of the launch tube. Keep the front cover in place until you make the weapon-round ready for use. Always place the weapon-round on its side if you lay it down, and never stand it on its end.		
1. Fold identification, friend or foe (IFF) antenna.	_____	_____
2. Disconnect IFF interconnecting cable from gripstock.	_____	_____
3. Place weapon on ground with gripstock up.	_____	_____
4. Disengage gripstock safety latch.	_____	_____
5. Separate gripstock from launch tube.	_____	_____
6. Remove the gripstock connector protective cover from the new missile-round.	_____	_____
7. Engage gripstock pin to missile-round hinge.	_____	_____
8. Engage gripstock safety latch.	_____	_____
9. Install a BCU.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show the what was done wrong and how to do it correctly.

References	Related
Required	TM 9-1425-429-12

Perform Critical Weapon Checks on the Stinger Weapon
441-067-1008

Conditions: This task is performed when time does not permit the completion of all checks required by technical manual (TM) 9-1425-429-12. Newly issued weapon and cleaning materials are available. TM will not be available.

Standards: This task is accomplished when all steps in the evaluation guide have been completed within 5 minutes.

Evaluation Preparation: Setup: Test this task with either the weapon or field handling trainer.

Brief Soldier: Tell the Soldier that he is to perform critical weapon checks on the Stinger weapon within 15 minutes.

Performance Measures	<u>GO</u>	<u>NO GO</u>
WARNING: Battery cooling unit (BCU) should not be in the receptacle while weapon is being checked. NOTE: Do not point the weapon toward the sun.		
1. Check the blowout disk to ensure that it is not cracked or broken.	_____	_____
2. Ensure that the launch motor squib leads are not damaged or broken. Run your finger along the wires. DO NOT remove adhesive tape when checking.	_____	_____
3. Check the launch tube for cracks or if broken.	_____	_____
4. Ensure the desiccant cartridge humidity indicator is green. If not green, take the following corrective actions: <ul style="list-style-type: none"> a. If the desiccant cartridge humidity indicator is tan, replace it at once with a green desiccant cartridge. b. If the desiccant cartridge turns tan again within 24 hours, return the missile to the ammunition supply point (ASP). c. If the desiccant cartridge is tan, do not use launch tube for 24 hours after replacing desiccant cartridge. 	_____	_____
5. Remove the front cover and inspect the infrared (IR) window to ensure that it is clean and not scratched, broken, or cracked. (If the IR window needs cleaning, use lens cleaning tissue.)	_____	_____
6. Check the range ring to ensure that it is not loose or defective, and torque paint seals.	_____	_____
7. Check the rear sight reticle to ensure that it is not loose or defective, and torque paint seals.	_____	_____
WARNING: If the paint seals on the screws holding the range ring or rear sight reticle to the sight assembly are broken, assume that they have tampered with and do not use the launch tube until boresighting has been verified.		
8. Check the two acquisition indicators and wires to ensure that they are not damaged.	_____	_____
WARNING: BCU should not be in the receptacle while weapon is being checked. If a BCU is installed, DO NOT remove the BCU. CAUTION: Sound and feel of switches may vary. DO NOT use more than usual force.		
9. Check the safety and actuator device by pressing and releasing the lever. A click should be heard. When released, the lever should return to the safe position.	_____	_____

Performance Measures	<u>GO</u>	<u>NO GO</u>
10. Check the uncaging switch, in three positions (center and both ends), by pressing and releasing the switch. A click should be heard each time, and the switch should return to the original position.	——	——
11. Check the firing trigger by squeezing and releasing the trigger. A click should be heard, and the trigger should return to its original position.	——	——
12. Check that the latch mechanism holds the gripstock assembly securely to the launch tube.	——	——
NOTE: For Performance Measure 13, have the Soldier check all BCUs. DO NOT remove a installed BCU from the weapon to check it.		
13. Check the color of the heat sensitive indicator on the BCU. It should be pink or white. If not, discard the BCU.	——	——
a. Check the holes over the burst disc diaphragm on the BCU. If the silver foil has been ruptured, discard the BCU.		
b. Check the rubber grommet over the needle on the BCU. If the rubber grommet is pushed back, return the BCU to ASP.		
c. Check the needle without removing the rubber grommet on the BCU. If bent, do not attempt to straighten it, and return the BCU to ASP.		
d. Check the BCU housing to ensure that it is not cracked. If so, discard the BCU.		

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
TM 9-1425-429-12

Related
FM 44-18-1

Perform PMCS on the Stinger Weapon
441-067-1009

Conditions: This task is performed upon receipt of a weapon or when the humidity indicator is pink, with the following available items:

1. Stinger weapon round with identification, friend or foe (IFF) interrogator.
2. TM 9-1425-429-12.
3. Cleaning materials.
4. DA Form 2404 (Equipment Maintenance Work Sheet).

Standards: This task is accomplished when all steps in the evaluation guide have been completed and all uncorrected faults have been annotated on the DA Form 2404.

Evaluation Preparation: Setup: Test this task with either the weapon or field handling trainer. To evaluate the Soldier's ability to recognize unacceptable conditions when performing this task, use damaged equipment, when available.

Brief Soldier: Tell the Soldier to perform preventive maintenance checks and services (PMCS) on the Stinger weapon within 30 minutes.

Performance Measures

GO **NO GO**

NOTE: For all performance measures, have the Soldier state what action should be taken if the weapon is found to be defective. Also have the Soldier state what he is looking for on all performance measures before going to the next performance measure.

1. Perform visual inspection of the wooden or metal container.	—	—
WARNING: Before opening container, ensure container is depressurized.		
WARNING: Battery coolant unit (BCU) should not be in receptacle while weapon is being checked. NOTE: If a BCU is in receptacle, remove and return to ammunition supply point (ASP), and then replace BCU receptacle cap. Make certain the safety and actuator device is in the safe position.		
2. Inspect the launch tube.	—	—
3. Inspect the protective shock ring and blowout disk.	—	—
4. Inspect the IR window and nylon ring.	—	—
5. Inspect the range ring and rear sight reticle and torque paint seals.	—	—
6. Inspect the eyeshield.	—	—
7. Inspect the acquisition indicators and wires.	—	—
8. Check the desiccant cartridge humidity indicator.	—	—
9. Inspect the IFF connector cap.	—	—
10. Inspect the BCU receptacle and contact pins.	—	—
11. Inspect the material covering the launch motor igniter squib leads.	—	—
12. Inspect the IFF antenna and gripstock.	—	—
13. Check the antenna cables and cable connectors.	—	—
WARNING: Before continuing with gripstock, ensure there is not a BCU in the receptacle.		

Performance Measures**GO** **NO GO**

14. Check the IFF interrogate switch.

15. Check the safety and actuator device.

16. Check the firing trigger.

17. Check the uncaging switch.

18. Check the gripstock latch mechanism.

NOTE: For Performance Measures 19 through 23, check all BCUs available.

19. Check BCU heat sensitive indicator.

20. Check BCU burst disk diaphragm.

21. Check BCU needle.

22. Check BCU contact rings.

23. Check BCU housing.

NOTE: If a BCU is inserted in a weapon-round, then removed without firing, return BCU to ASP.

24. Inspect the IFF interrogator and interconnecting cable.

25. Inspect the IFF interrogator battery.

NOTE: Performance Measures 26 through 28 apply to the AN/PPX-3B only.

26. Inspect the IFF interrogator READ switch sealing boot.

27. Inspect the IFF interrogator day indicator display window.

NOTE: Be sure battery is charged when checking for display on day indicator.

28. Press and hold READ switch on lower right-hand corner of unit.

29. Enter uncorrectable deficiencies on DA Form 2404.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.**References****Required**

TM 9-1425-429-12

Related

DA FORM 2404

DA Pam 738-750

Destroy Stinger Weapon to Prevent Enemy Use

441-067-1011

Conditions: This task is performed when the weapon is subject to capture or abandonment and when, in the judgment of the unit commander, such action is necessary. The following items are available:

1. Stinger weapon round.
2. Gasoline, oil, incendiary grenades, explosive grenades, antitank rockets, and individual weapon (some of the items listed may not be available for use).

Standards: This task is accomplished when all steps in the evaluation guide have been completed (causing destruction beyond repair) and all safety precautions have been observed.

Evaluation Preparation: Setup: Use locally fabricated training aids in place of actual demolitions and flammables for training and evaluation purposes. To ensure availability of training aids, make arrangements in advance to acquire the needed training aids from your local training aids support center.

Brief Soldier: Tell the Soldier the direction of the enemy and friendly forces and “talk through” the performance measures as he simulates performing them.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Destroy the guided missiles by firing them in the enemy direction. (This is the preferred method.)	_____	_____
2. Select a destruction point that will cause the greatest obstruction to enemy movement.	_____	_____
3. Select point of destruction that will not hinder or endanger friendly troops.	_____	_____
4. Destroy the Stinger weapons by burning.	_____	_____
DANGER: The weapon-round or missile-round contains two rocket motors and a high-explosive (HE) warhead. This creates an extreme hazard to personnel when a weapon is destroyed by burning.		
a. Heap all materials to be burned if time or conditions permit. b. If available, place a sufficient number of incendiary grenades about the items.		
WARNING: To prevent serious injury or burns to personnel, care must be taken in handling of highly volatile liquids.		
c. Douse the items with gasoline, oil, or other flammable liquids. d. Ignite the equipment from a safe distance by firing incendiary grenades, bursts from a flame thrower, combustible train, or other appropriate means. e. Immediately take cover.		
DANGER: Safety fuze burns at a rate of 1 foot in 30 to 40 seconds; cut off and test a portion of the fuze before using.		
NOTE: Safety fuze which contains black powder and blasting caps must be protected from moisture at all times.		
5. Destroy Stinger weapons by using demolition.	_____	_____
a. Observe safety procedures.		
(1) Test safety fuze burn rate. (2) Protect black powder safety fuze and blasting caps from moisture. (3) Keep blasting caps, detonating cord, and safety fuzes separated from the explosive charges until actually required for use.		
b. Prepare and strategically place the explosive charges about the items.		
c. Prime the explosive charges by one of the following methods:		
(1) Dual prime the charges when using detonating cord.		

Performance Measures**GO** **NO GO**

- (2) Prime the explosive charges with nonelectric blasting caps crimped to at least 5 feet of safety fuze.
 - (3) Prime the explosives with electric blasting caps.
 - d. Detonate the explosive charges by one of the following methods:
 - (1) Ignite safety fuzes and take cover immediately.
 - (2) Take cover before detonating electrical blasting caps.
 - 6. Destroy Stinger weapons by gunfire. (This is the least preferred method.)
- DANGER: The presence of live rocket motors and HE warheads present an extreme hazard to personnel firing at the weapon-round and missile-round from a distance of less than 500 yards (418 meters). If possible, the guided missile should be destroyed by firing them.
- a. Stack or pile the weapons and equipment.
 - b. Fire on the equipment from at least 500 yards away using one of the following:
 - (1) Antitank rockets.
 - (2) Artillery.
 - (3) Rifle grenades.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 5-250

TM 9-1425-429-12

Perform Operator Corrective Maintenance Procedures on the Stinger Weapon
441-067-1012

Conditions: This task is performed whenever deficiencies are discovered during preventive maintenance checks and services (PMCS), with the following available items:

1. TM 9-1425-429-12 (Chapter 3, Section III).
2. TL-29 knife.
3. Replacement parts.
4. DA Form 2404 (Equipment Maintenance Work Sheet).

Standards: This task is accomplished when the steps in the evaluation guide have been completed or documented on DA Form 2404.

Evaluation Preparation:

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Replaces defective web sling as specified in paragraph 3-7 and Figure 3-1 (TM 9-1425-429-12).	—	—
2. Replaces defective eyeshield as specified in paragraph 3-10 and Figure 3-1 (TM 9-1425-429-12).	—	—
3. Replaces desiccant cartridge/humidity indicator as specified in paragraph 3-11 and Figure 3-1 (TM 9-1425-429-12).	—	—
4. Replaces defective boots as specified in paragraph 3-11 and Figure 3-1 (TM 9-1425-429-12).	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
TM 9-1425-429-12

Related
DA FORM 1249

Prepare the Stinger Weapon for Firing
441-067-1026

Conditions: This task is performed when the team chief orders the gunner to prepare a weapon for firing. A Stinger weapon with battery coolant unit (BCU) installed is available.

Standards: This task is accomplished when the following evaluation guide steps have been accomplished.

Evaluation Preparation:

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Attach identification friend or foe (IFF) interrogator to belt and clamp IFF connector cable to flak jacket.	—	—
2. Place weapon on right shoulder.	—	—
3. Touch BCU to make sure it is inserted.	—	—
4. Unfold IFF antenna with left hand.	—	—
5. Remove front cover with left hand.	—	—
6. Raise sight assembly into the lock position with left hand.	—	—
7. Remove IFF connector cable from flak jacket.	—	—
8. Remove IFF protective cover on the grip stock.	—	—
9. Connect IFF connector cable to gripstock.	—	—
10. Move the left hand forward and grasp the uncaging switch. (DO NOT press the switch).	—	—
11. Point weapon at target and center target in range ring of front sight range ring.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References
Required

Related
 FM 44-18-1
 TM 9-1425-429-12

Subject Area 12: PISTOLS

Perform a Function Check on an M9 Pistol**071-004-0002****Conditions:** Given an M9 pistol with a magazine.**Standards:** Perform operational checks in correct sequence and determine whether the M9 pistol will function correctly or not.**Performance Steps****WARNING:** Ensure the pistol is clear before you perform a function check.

1. Place the safety lever in SAFE position.
2. Insert the empty magazine into the magazine well.
3. Retract the slide fully, then release it. The slide should lock to the rear.
4. Depress the slide stop and allow the slide to return fully forward. At the same time, the hammer should fall to the full forward position.
5. Squeeze and release the trigger. The firing pin block should move up and down. The hammer should not move.
6. Place the safety lever in the FIRE position.
7. To check the double action, squeeze the trigger. The hammer should cock and fall.
8. Squeeze the trigger again, and hold it to the rear. While holding the trigger to the rear, manually retract and release the slide. Release the trigger. You should hear a click, but the hammer should not fall.
9. To check the single action, squeeze the trigger. The hammer should fall.
10. If the pistol functions as indicated during the checks, it is operational.

Evaluation Preparation: Setup: At the test site, provide the equipment listed in the task conditions statement.**Brief Soldier:** Tell the Soldier to perform a function check based on the steps in this task and to determine whether or not the M9 pistol functions correctly.**Performance Measures**

	<u>GO</u>	<u>NO GO</u>
1. Place the safety lever in the SAFE position.	_____	_____
2. Insert the empty magazine into the magazine well.	_____	_____
3. Retract the slide fully, then release it.	_____	_____
4. Depress the slide stop and allow the slide to return fully forward.	_____	_____
5. Squeeze and release the trigger.	_____	_____
6. Place the safety lever in FIRE position.	_____	_____
7. Check the double action by squeezing the trigger.	_____	_____

Performance Measures**GO** **NO GO**

- | | | |
|---|----|----|
| 8. Squeeze the trigger again and hold it to the rear, at the same time manually retracting and releasing the slide. Release the trigger. You should hear a click. The hammer should not fall. | —— | —— |
| 9. Check the single action by squeezing the trigger. The hammer should fall. | —— | —— |

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References**Required****Related**

TM 9-1005-317-10

Correct Malfunctions of an M9 Pistol

071-004-0005

Conditions: Given an M9 pistol, loaded magazine with 9-mm ammunition, cleaner lubricant and preservative (CLP); lubricating oil arctic weather (LAW), lubricating oil semifluid (LSA), bore brush, wiping rags, M4 cleaning rod (handle with 1 section and a swab holder), and small arms cleaning swabs.

Standards: Without damaging the pistol, eliminate malfunctions caused by faulty action of either the pistol or the ammunition while in an environment that requires engagement of targets.

Performance Steps

WARNING: During the following procedures always keep the pistol pointed in a safe direction.

1. Perform immediate action.
 - a. When the slide is fully forward and the pistol fails to fire, apply immediate action as follows:
 - (1) Ensure the safety lever is in FIRE position.
 - (2) Squeeze the trigger again.
 - (3) If the pistol does not fire, ensure that the magazine is fully seated, retract the slide to the rear, and release.
 - (4) Squeeze the trigger.
 - (5) If the pistol still does not fire, remove the magazine and retract the slide to eject the chambered cartridge. Insert a new magazine, retract the slide, and release to chamber another cartridge.
 - (6) Squeeze the trigger.
 - (7) If the pistol does not fire, replace the ammunition.
 - (8) If the pistol fails to fire again, clear the pistol and perform remedial in accordance with (IAW) step 2.
 - b. When the slide is not fully seated forward, remove finger from the trigger. With the other hand, try to push the slide fully forward. If the slide will not move forward, proceed as follows:
 - (1) Place safety lever in SAFE position.
 - (2) Remove the magazine.
 - (3) Grasp the slide and retract it to the rear, locking it with the slide stop.
 - (4) Inspect the chamber and remove any obstructions.
 - (5) Insert another loaded magazine into the pistol.
 - (6) Release the slide.
 - (7) Place the safety lever in the FIRE position, aim, and squeeze the trigger.
 - (8) If the pistol does not fire, clear the pistol and perform remedial action IAW step 2.
2. Perform remedial action.
 - a. Ensure the pistol is clear.
 - b. Disassemble the pistol and inspect for dirty, corroded, missing, or damaged parts.
 - c. Clean dirty or corroded parts. Replace missing or damaged parts.
 - d. Lubricate and assemble the pistol.
 - e. Inspect magazine for damaged parts. Replace magazine if necessary.
 - f. Check for dirty or damaged ammunition. Clean or replace ammunition.
 - g. Perform a function check.
 - h. Load the pistol and try to fire.
 - i. If the pistol does not fire, clear the pistol and notify your supervisor.

Evaluation Preparation: Setup: Provide equipment and materials listed in conditions. Use performance steps in the training outline to evaluate performance of the task.

Brief Soldier: Tell the Soldier that the pistol has stopped firing. Tell the Soldier to perform immediate and remedial action on the pistol.

Performance Measures**GO****NO GO**

1. Perform immediate action.
2. Perform remedial action.

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References**Required****Related**

TM 9-1005-317-10

Engage Targets With a Makarov Pistol

331-201-2204

Conditions: Given a Makarov pistol and a magazine containing three dummy rounds of 9-mm x 18-mm Soviet ammunition.

- Standards:**
1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Insert a loaded magazine into the weapon.
 - b. Rotate the safety downward; grasp the slide by its milled grooves, pull it fully to the rear, then allow it to go forward, chambering a round.
 - c. Push the slide stop up, and lock the slide. If desired, rotate the safety up until it covers the red dot. The hammer will fall, but the safety blocks the firing pin.

CAUTION: Pistol is now ready to fire.

 - d. Rotate the safety lever down to the FIRE position.
 - e. Using your thumb, pull the hammer back.
 - f. Aim and fire (the slide will remain back after the last round is fired).
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Recock the weapon.
 - (2) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the slide to the rear and lock it, observing the extraction and ejection of the cartridge.
 - (2) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer has not been struck, the weapon is probably at fault. Clear the weapon, and inspect it for serviceability.
3. Clear the weapon.
 - a. Press the magazine catch away from the magazine and remove the magazine.
 - b. Pull the slide to the rear and visually inspect the chamber.
 - c. Release the slide and put the safety in the SAFE position.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon.	_____	_____
2. Reduce a stoppage.	_____	_____
3. Clear the weapon within 10 seconds.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related
ISBN 0710619251

Engage Targets With a Browning High Power (BHP) Pistol
331-201-2205

Conditions: Given a BHP pistol and a magazine containing three dummy rounds of 9-mm x 19-mm Parabellum ammunition.

- Standards:** 1. Load and fire the weapon.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Insert loaded magazine into weapon.
 - b. Pull the slide to the rear, and allow it to go forward, chambering a round.

CAUTION: Weapon is now ready to fire.

 - c. Aim and fire.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Recock the hammer.
 - (2) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the slide to the rear and lock it, observing the extraction and ejection of the cartridge.
 - (2) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer has not been struck, the weapon is probably at fault. Clear the weapon, and inspect it for serviceability.
3. Clear the weapon.
 - a. Press the magazine catch, and remove the magazine.
 - b. Pull the slide to the rear and lock it, if necessary.
 - c. Visually inspect the chamber.
 - d. Push the slide stop down to release the slide.
 - e. Insert the empty magazine into the weapon.
 - f. Pull the trigger.
 - g. Remove the empty magazine.

Performance Measures	GO	NO GO
1. Load and fire the weapon.	_____	_____
2. Reduce a stoppage.	_____	_____
3. Clear the weapon within 10 seconds.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References	Related
Required	ISBN 0710619251

Maintain a Makarov Pistol
331-201-2220

Conditions: Given a Makarov pistol.

- Standards:** 1. Disassemble the weapon within 30 seconds.
2. Reassemble the weapon within 1 minute.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. Remove the receiver.
 - (1) Pull the front of the trigger guard down.
 - (2) When the trigger guard clears the receiver, press the trigger guard to one side.
 - (3) Rest the trigger guard against the receiver.
 - b. Remove the slide and the recoil spring.
 - (1) Hold the slide by its milled grooves.
 - (2) Pull the slide back.
 - (3) Lift the rear end of the slide out of the receiver.
 - (4) Ease the slide forward over the barrel.
 - (5) Pull the recoil spring off the barrel.
2. Reassemble the weapon.
 - a. Ensure the hammer is cocked, the safety is in the FIRE position, and the trigger guard is down.
 - b. Reassemble and replace the slide and the recoil spring.
 - (1) Slide the recoil spring, small end first, over the barrel.
 - (2) Insert the recoil spring end into the circular front section of the slide.
 - (3) Slip the barrel through the hole in the slide.
 - (4) Pull the slide back.
 - (5) Press the slide down into position on the receiver; the recoil spring will drive the slide forward.
 - c. Disengage the trigger guard from the receiver and return it to its normal position.
3. Perform a function check.
 - a. Place the weapon in the FIRE position and cock.
 - b. Place the weapon in the SAFE position (the hammer should fall, but the safety blocks the firing pin).
 - c. Place the weapon in the FIRE position (the trigger moves to the double-action position).
 - d. Pull the hammer to the rear to cock the weapon.
 - e. Pull the trigger (the hammer should fall).
 - f. Release the trigger and pull again (the hammer will raise and fall).

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 30 seconds.	_____	_____
2. Reassemble the weapon within 1 minute.	_____	_____
3. Perform, in the proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

**References
Required**

Related
ISBN 0710619251

Maintain a Browning High Power (BHP) Pistol
331-201-2221

Conditions: Given a BHP pistol and an unloaded magazine.

Standards: 1. Disassemble the weapon within 1 minute.
2. Reassemble the weapon within 2 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. Pull the slide to the rear until the safety engages the dismounting notch (second notch).
 - b. Remove the slide stop.
 - (1) Press the rear of the slide stop up; at the same time, press in on the right end of the slide stop pin to start the slide stop out of the receiver.
 - (2) Pull out the slide stop.
 - c. Remove the slide assembly.
 - (1) Hold the slide firmly and release the thumb safety, allowing the slide to move forward.
 - (2) Pull the slide from the receiver.
 - d. Remove the barrel from the slide.
 - (1) Pull forward on the recoil spring guide (out of its seat in the barrel).
 - (2) Ease the guide and recoil spring up and out of the slide.
 - (3) Pull the rear end of the barrel up and out of the slide until it is free.
 - e. Disassemble the slide assembly.
 - (1) Hold the slide with the muzzle end pointed down.

NOTE: Use the slide stop as a tool.

- (2) Press the firing pin forward into its recess.
- (3) Hold the thumb of your other hand over the firing pin recess, and remove the firing pin stop.
- (4) Remove the firing pin and firing pin spring from their recess and separate. Also remove the extractor.

2. Reassemble the weapon.
 - a. Assemble the slide assembly.
 - (1) Assemble the firing pin and firing pin spring and replace the extractor.
 - (2) Replace the firing pin and spring into their recess in the slide, muzzle pointed down.
 - (3) Hold the thumb of your other hand over the firing pin recess to compress the firing pin spring.
 - (4) Align the firing pin stop with its grooves in the rear of the slide, and replace it halfway (rounded portion pointed to the top of the slide).

NOTE: Use the slide stop as a tool.

- (5) Press in on the end of the firing pin, and slowly slide the firing pin stop in while withdrawing the slide stop until the firing pin stop locks into place.
- b. Reassemble the barrel into the slide assembly.
 - (1) Insert the muzzle end of the barrel into the slide, and press to the rear until the locking ribs snap into place.
 - (2) Insert the recoil spring with guide into the front of the slide, then mate the recoil spring guide to the barrel.

NOTE: The cutout portion of the guide must be up while holding the slide group upside down.

- c. Replace the slide assembly.
 - (1) Start the slide onto the rails of the receiver (from the front).
 - (2) Pull the slide back until the safety can engage the dismounting notch.
- d. Replace the slide stop pin (left to right).
- e. Release the slide by pushing the safety lever down.

Performance Steps

3. Perform a function check.
 - a. Cock the weapon.
 - b. Place the weapon in the SAFE mode.
 - c. Insert the magazine.
 - d. Squeeze the trigger (the hammer should not fall).
 - e. Place the weapon in the FIRE mode.
 - f. Pull the trigger (the hammer should fall).
 - g. Cock the hammer halfway.
 - h. Pull the trigger (the hammer should not fall).
 - i. Cock the hammer fully to the rear and remove the magazine.
 - j. Squeeze the trigger (the hammer should not fall).
 - k. Insert the magazine.
 - l. Pull the trigger (the hammer should fall).
 - m. Remove the magazine.

Performance Measures**GO** **NO GO**

1. Disassemble the weapon within 1 minute.
2. Reassemble the weapon within 2 minutes.
3. Perform, in the proper sequence, a function check.

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Maintain an M1911 Caliber .45 Pistol
331-201-2239

Conditions: Given an M1911 caliber .45 pistol, magazine, caliber .45 ball ammunition, and lighted work area.

Standards: Unload, clear, disassemble, clean, lubricate, and assemble pistol. Perform function check, and test all safety devices in accordance with (IAW) the performance measures.

Performance Steps

1. Unload and clear the pistol—
 - a. Place the safety in the FIRE position.
 - b. Hold the pistol in the raised pistol position.
 - c. Press the magazine catch and remove the magazine (Figure 1).

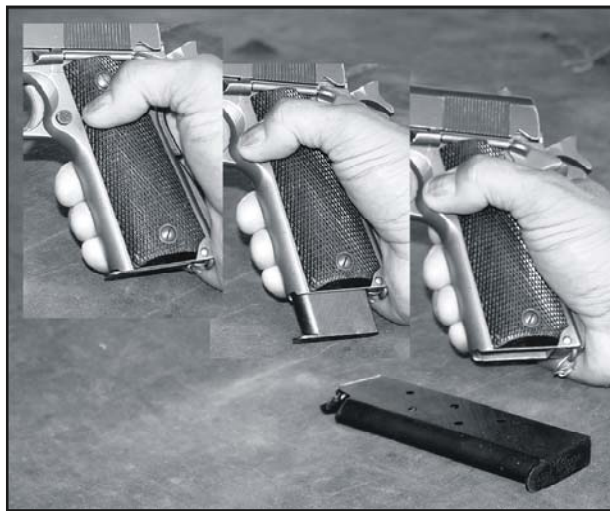


Figure 1. Remove the Magazine

- d. Pull the slide all the way to the rear. Lock it in this position by pushing up on the slide stop (Figure 2).

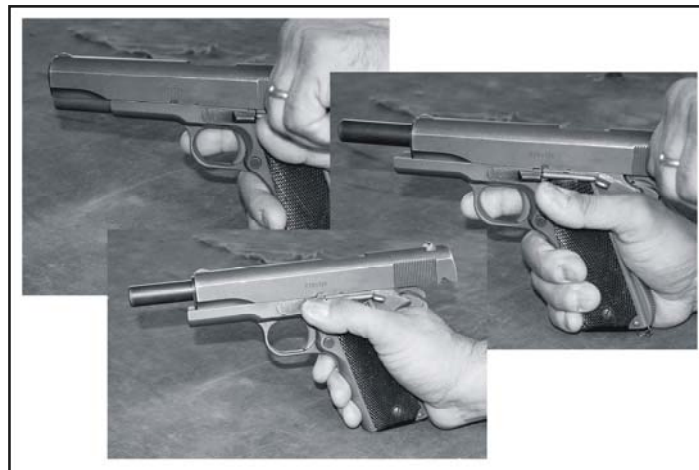


Figure 2. Lock Slide

Performance Steps

- e. Point the pistol skyward. Look through the ejection opening into the chamber to be sure the pistol is clear.
- 2. Disassemble the pistol—
 - a. Push down on the slide stop, and let the slide go forward (Figure 3).
 - b. Put on the safety by pushing it up into the notch on the slide (Figure 3).



Figure 3. Release Slide Stop and Engage Safety

- c. Push down on the recoil spring plug with a thumb (Figure 4).
- d. Turn the barrel bushing one-quarter turn clockwise. Continue to hold down on the recoil spring plug (Figure 4).
- e. Slowly release the recoil spring plug so both the plug and the spring stick out beyond the barrel bushing (Figure 4).



Figure 4. Release the Recoil Spring and Plug

Performance Steps

- f. Remove the recoil spring plug.
- g. Push down on the safety so it moves out of the notch in the slide.
- h. Move the slide group halfway back so the half-oval opening on the slide is lined up with the ribbed part of the slide stop (Figure 5).
- i. Push down on the rounded end of the slide stop on the right side of the pistol (next to the serial number). Pull the slide stop out (Figure 5).



Figure 5. Remove the Slide Stop

- j. Turn the pistol upside down with the pistol grip pointed up. Hold it by the slide group (Figure 6).
- k. Slide the receiver group to the rear until it separates from the slide group. Lay the receiver group aside (Figure 6).



Figure 6. Remove the Receiver Group

Performance Steps

- l. Remove the recoil spring guide and the recoil spring from the slide group. Separate the two parts (Figure 7).
- m. Turn the barrel bushing counterclockwise as far as it will go. Pull it out.
- n. Turn the slide group upside down.
- o. Put a finger into the ejection opening. Push up on the barrel a little. Slide the barrel out the front end of the slide group (Figure 7).

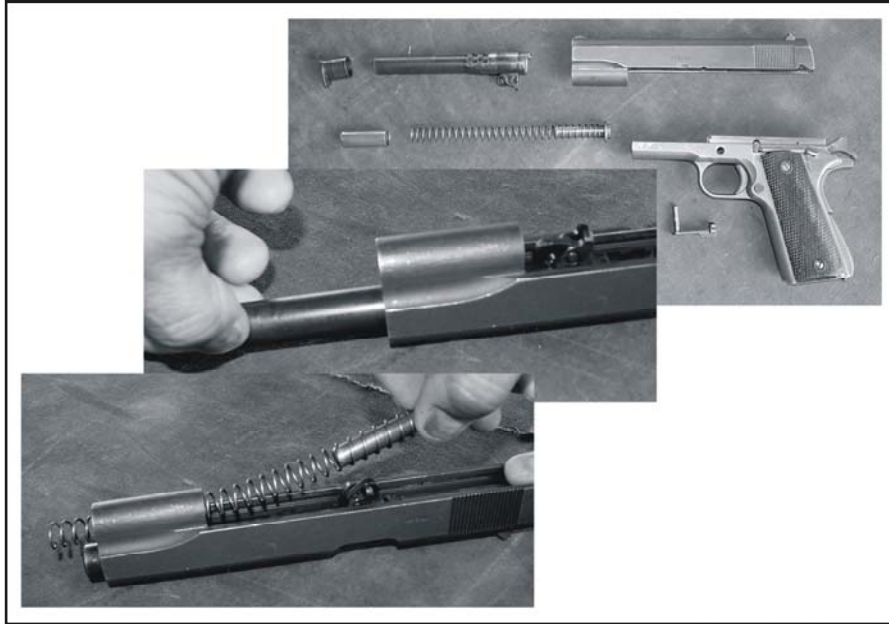


Figure 7. Remove the Barrel

NOTE: Further disassembly is not authorized.

3. Clean the pistol—
 - a. Use cleaner, lubricant, preservative (CLP) to clean the bore and face of the slide.
 - b. Clean the bore and chamber.
 - (1) Wet a swab with CLP, and run it back and forth through the bore and chamber several times.
 - (2) Attach the pistol bore brush to the cleaning rod, and run it through the bore and chamber several times. Each time, push it all the way through the barrel and pull it all the way back out. Reversing the direction of the bore brush while it is in the bore will ruin the brush.
 - (3) Run dry swabs through the bore and the chamber until the swabs come out clean.
 - (4) Inspect the bore for cleanliness. If it is not free of all residue, repeat the above cleaning process.
 - c. Clean the other parts with CLP to remove oil or grease. Use rags to clean the large parts.
 - d. Dry the parts with clean, dry rags.
4. Lubricate the pistol, cover all parts with a light coat of CLP.
5. Assemble the pistol—
 - a. Hold the slide group upside down in one hand. With the other hand, grasp the barrel so the barrel link is on top. Slide the barrel in through the muzzle opening, barrel stud up and chamber first, until it drops into place with a click (Figure 8).

Performance Steps



Figure 8. Insert the Barrel into Slide Group

- b. Put barrel bushing into the slide group. Turn it one-half turn clockwise (Figure 9).



Figure 9. Replace Barrel Bushing

- c. Put the recoil spring on the recoil spring guide. Make sure the spring fits tightly. If the spring slides on easily and feels loose, remove it. Turn it around and put it back on the guide.
- d. Hold the slide group upside down. Place the recoil spring through the rear of the muzzle opening. Set the recoil spring guide's concave side snugly against the barrel (Figure 10).

Performance Steps

Figure 10. Replace Recoil Spring and Guide

- e. Lift the barrel link up.
- f. Align the grooves on either side of the receiver and the slide group, and carefully slide the receiver group onto the slide group, ensuring the barrel link remains in the up position (Figure 11).



Figure 11. Assemble Receiver and Slide Groups

- g. Carefully turn the pistol right side up. Ensure the holes on each side of the receiver group are lined up with the barrel link. Ensure the half-oval slot on the slide is aligned with the square opening on the receiver group.
- h. Place the slide stop in the hole on the left side of the receiver group. Twist the slide stop downward slightly. Push it in as far as it will go. At the same time, push it up and put it back in its proper position (Figure 12).

Performance Steps

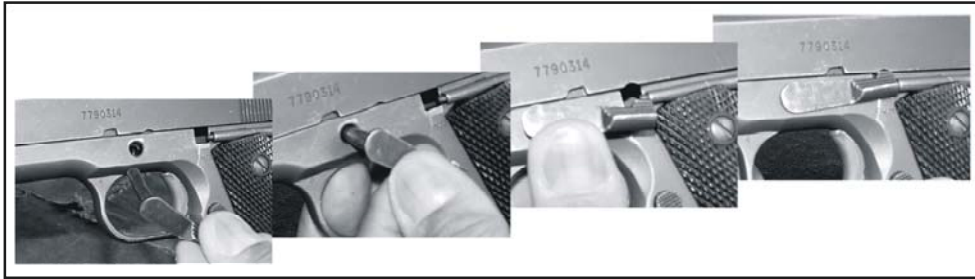


Figure 12. Replace Slide Stop

- i. Push the slide group all the way forward. Lock it in place by pushing the safety into the notch on the slide (Figure 13).



Figure 13. Lock Slide Group in Place

- j. Place the recoil spring plug on the recoil spring, which extends beyond the muzzle (Figure 14).
- k. Push the recoil spring plug and recoil spring into the slide group. Hold them in. Turn the barrel bushing one-quarter turn counterclockwise. This locks the recoil spring in place (Figure 14).

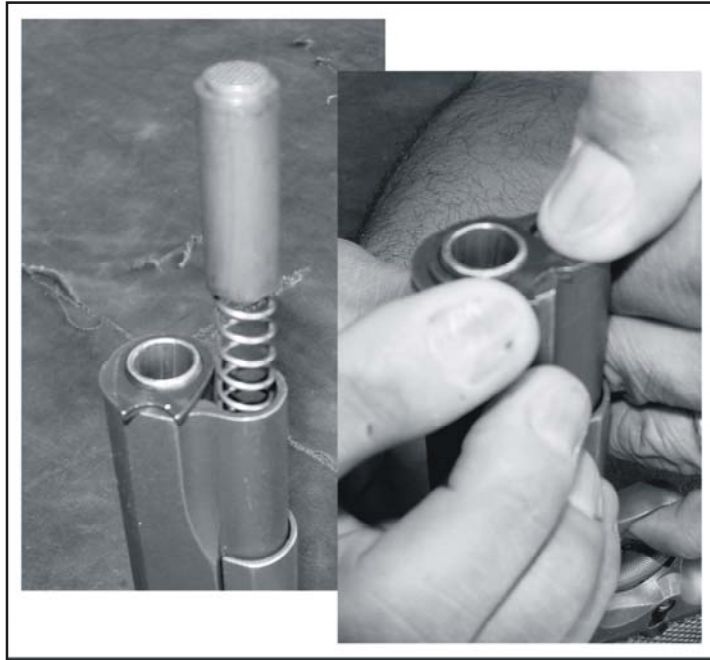
Performance Steps

Figure 14. Lock Recoil Spring and Plug in Place

6. Perform a function on the pistol—
- Push down on the safety so that it moves out of the notch on the slide (Figure 15).
 - Pull the slide all the way to the rear, and engage the slide stop (Figure 15).
 - Push down on the slide stop. Let the slide go forward (Figure 15).
 - Check the hammer to see if it stayed cocked (Figure 15).

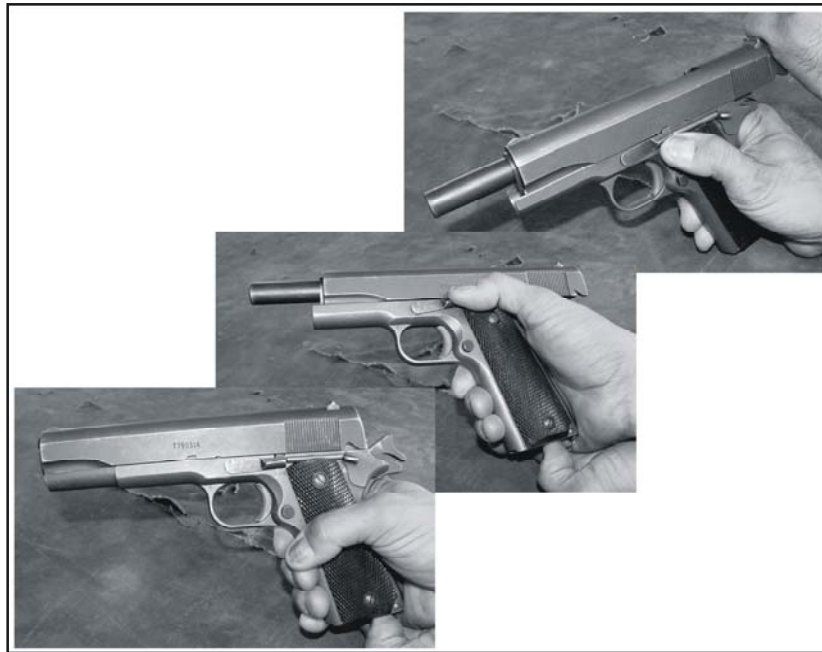


Figure 15. Cocked Hammer Check

Performance Steps

- (1) If the hammer stayed cocked, go to step 6e below.
 - (2) If the hammer did not stay cocked, turn the pistol over to the armorer for repair. If necessary, try to secure another weapon.
- e. Test the three safety devices.
- (1) Safety lock. With the pistol cocked and safety lock engaged, pull the trigger (Figure 16). If the hammer falls, the safety lock is not safe and must be replaced.



Figure 16. Safety Lock Check

- (2) Grip safety. Hold the pistol so that the grip safety is not depressed and the safety lock is not engaged (Figure 17). Pull the trigger. If the hammer falls, either the grip safety or sear spring is faulty and must be replaced.



Figure 17. Grip Safety Check

Performance Steps

(3) Half-cock safety (Figure 18).



Figure 18. Half-Cock Safety Check

- (a) Test A. With the grip safety depressed and the safety lock disengaged, cock the hammer to the half-cock position. Pull the trigger. If the hammer falls, the hammer or sear is faulty and must be replaced.
- (b) Test B. With the grip safety depressed and the safety lock disengaged, pull the hammer back nearly to the full-cock position and let it fall. The hammer should fall only to the half-cock position—if not, replace the hammer.

7. Check the ammunition—

- a. Look at the ammunition.
- b. If it is wet or dirty, wipe it clean with a dry cloth.
- c. See if any cartridges have dents, deep scratches, loose projectiles, or corrosion. If a cartridge has any of these defects, DO NOT try to fire it. Turn it in to the ammunition supply point.
- d. DO NOT oil or polish the cartridges.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Unload and clear the pistol.	—	—
a. Place the safety in the FIRE position.		
b. Hold the pistol in the raised position.		
c. Remove the magazine.		
d. Lock the slide to the rear.		
e. Look into the chamber.		
2. Disassemble the pistol.	—	—
3. Clean and lubricate the pistol.	—	—
4. Assemble the pistol.	—	—
5. Perform a function check.	—	—
6. Test the safety devices.	—	—
a. Test the safety lock.		
b. Test the grip safety.		
c. Test the half-cock safety.		

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

FM 3-23.25

Engage Targets With an Caliber .45 Pistol**331-201-2240**

Conditions: Given an M1911 caliber .45 pistol with ammunition and military E-silhouette targets.

Standards: Engage all targets from the required positions utilizing the marksmanship fundamentals in accordance with the performance measures.

Performance Steps

1. Identify the target. The most likely target is an enemy Soldier on foot.

2. Apply the fundamentals of quick fire.

NOTE: For quick fire without the use of sights, the pistol must act as an extension of the arm.

a. Obtain the proper grip.

- (1) Hold the pistol in the nonfiring hand, and form a vee with the thumb and forefinger of the shooting hand.
- (2) Place the pistol in the vee with the sights in line with the firing arm.
- (3) Wrap the lower three fingers around the grip, putting equal pressure to the rear with all three fingers (Figure 1).

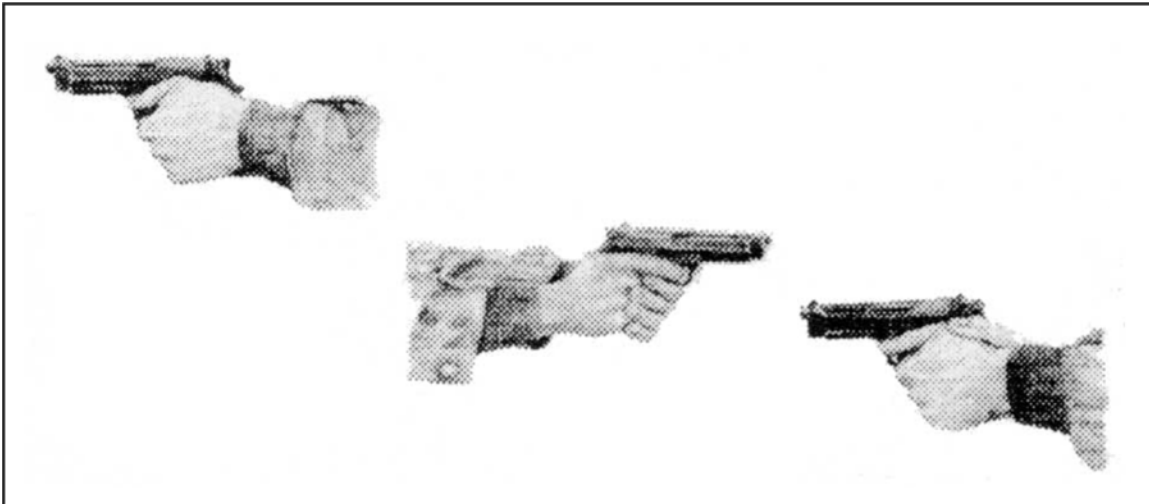


Figure 1. Proper Pistol Grip

- (4) Place the thumb alongside the pistol without applying any pressure.
- (5) Place the trigger finger on the trigger so the trigger can be pulled to the rear.
- (6) Grip the pistol tightly until the hand begins to tremble; relax until the trembling stops. At this point, the necessary pressure for a solid grip has been applied.

NOTE: If any of the three fingers on the grip are relaxed, the entire grip must be reapplied.

Performance Steps

3. Select the most stable firing position with the best cover. Consider the following positions:

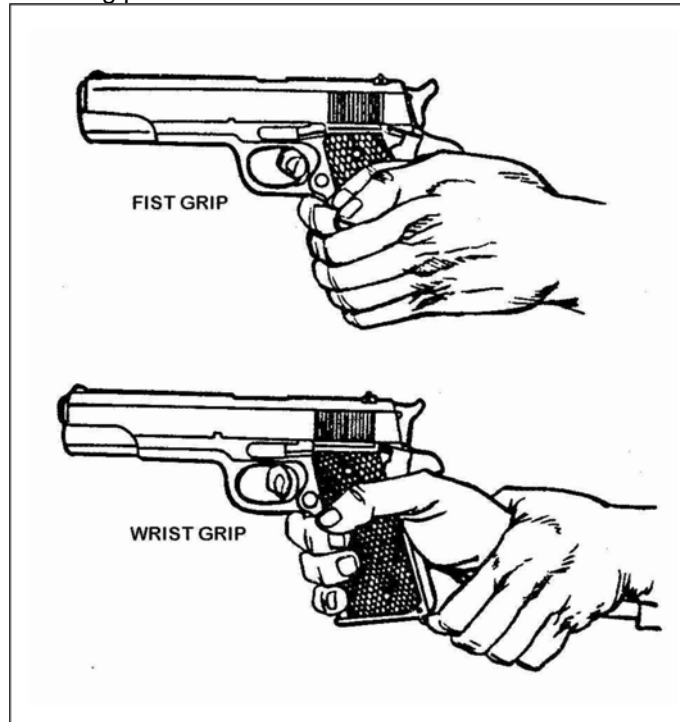


Figure 2. Nonfiring Hand Support

NOTE: The firing hand may be supported by using either grip for the nonfiring hand as shown in Figure 2.

- a. Prone (Figure 3).

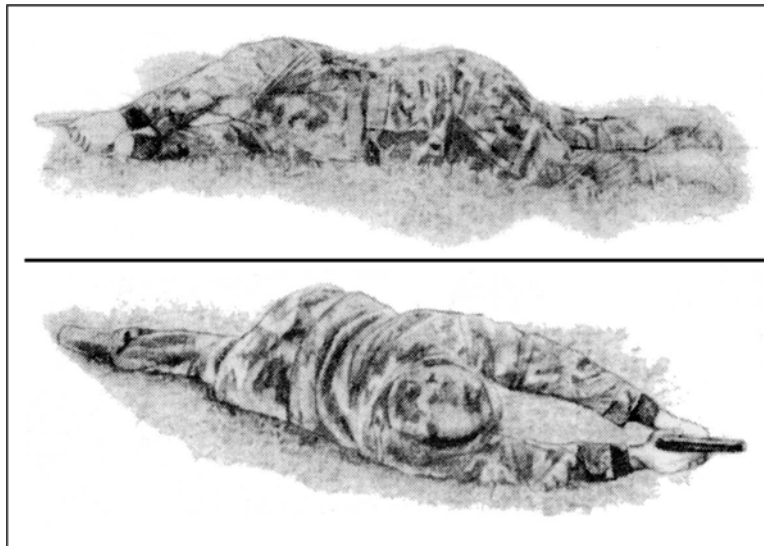


Figure 3. Prone Firing Position

- (1) Lie flat on the ground, facing the target.
- (2) Extend the arms to the front with the firing arm locked.
- (3) Wrap the nonfiring hand around either the wrist or the fingers of the firing hand.
- (4) Face forward with the head down between the arms and behind the weapon.

Performance Steps

- b. Standing with support (Figure 4).

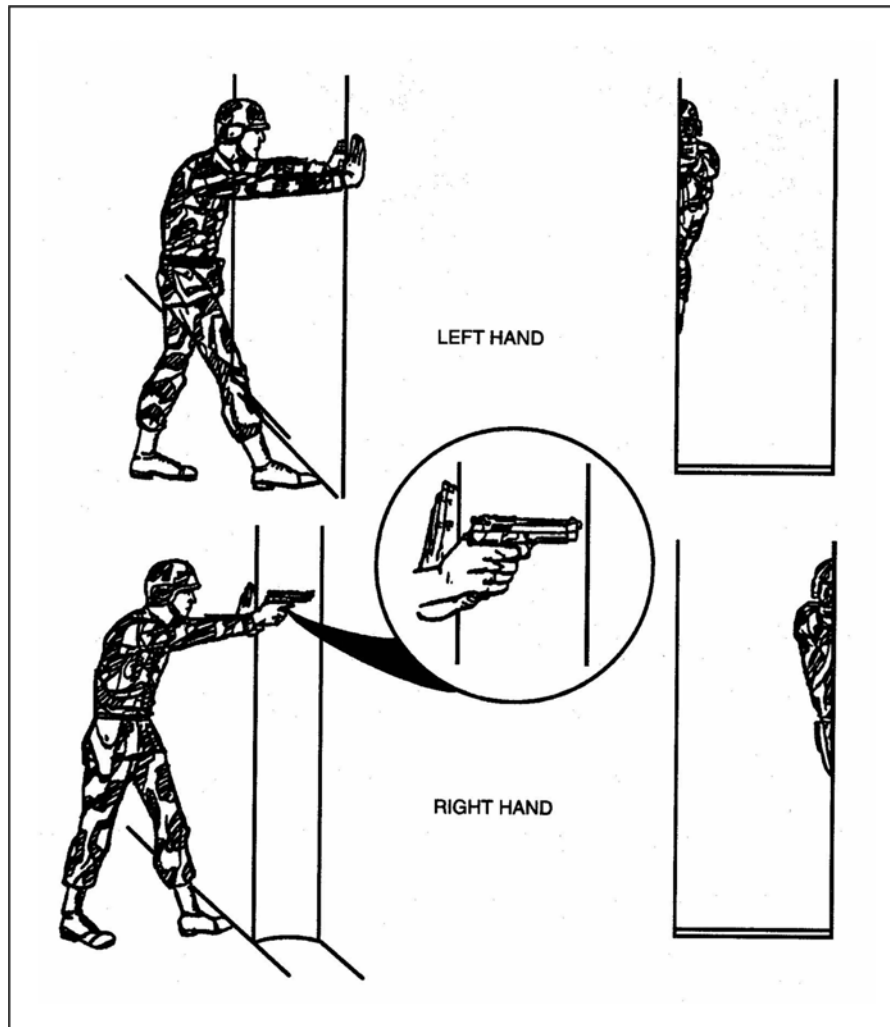


Figure 4. Standing With Support

- (1) Use available cover for support. For example, stand behind a tree or wall.
 - (2) Stand behind a barricade with the firing side on line with the edge of the barricade.
 - (3) Place the palm of the nonfiring hand at eye level at the edge of the barricade, extending the thumb past the edge of the barricade.
 - (4) Lock the elbow of the firing arm. Rest the forearm on the extended thumb of the nonfiring hand.
 - (5) Move the foot on the nonfiring side forward until the toe touches the bottom of the barricade.
- c. Kneeling (Figure 5).

Performance Steps

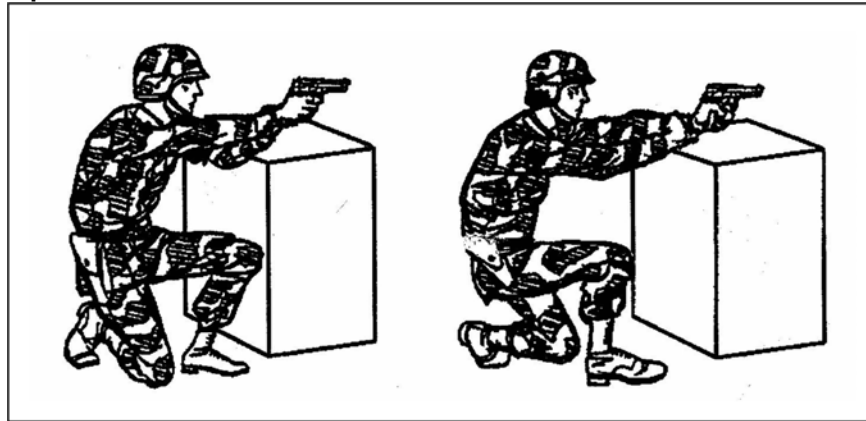


Figure 5. Kneeling Firing Position

- (1) Use available cover for support. For example, use a low wall, rocks, or a vehicle that can be fired over.
- (2) Place the firing knee on the ground. Put the left knee down to fire left-handed and the right knee down to fire right-handed.
- (3) Bend the other knee and place the foot on the nonfiring side flat on the ground, pointing toward the target. Both arms will extend over and be supported by the available cover.
- (4) Lock the wrist and elbow of the firing arm.
- (5) Wrap the nonfiring hand around the firing fist or wrist to support the firing arm.

NOTE: This position could create a silhouette for the enemy. When possible, fire around the side of walls, rocks, or vehicles instead of over them.

d. Standing without support (Figure 6).

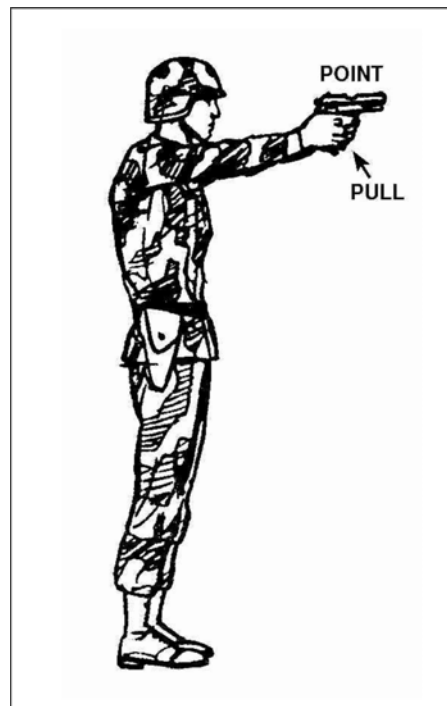


Figure 6. Standing Without Support

Performance Steps

- (1) Face the target.
 - (2) Place the feet a comfortable distance apart.
 - (3) Wrap the nonfiring hand around the fist or wrist of the firing hand. The wrist and elbow of the firing arm are locked toward the target.
 - (4) Keep your body straight.
- e. Crouching (Figure 7). This position is the same as the standing-without-support position, except the knees are bent slightly and you are balanced by leaning forward at the waist.

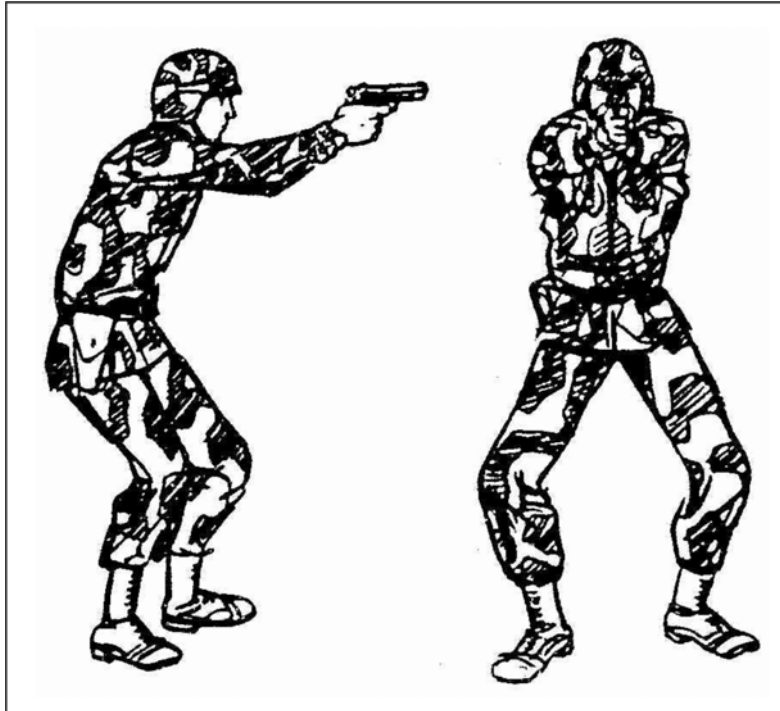


Figure 7. Crouching Firing Position

4. Apply the fundamentals of marksmanship.

a. Pistol grip.

- (1) Place the pistol in the vee formed by the thumb and forefinger of the firing hand with the sights in line with the firing arm. Wrap the lower three fingers around the pistol; grip with the middle finger under the trigger guard; grip with equal pressure on all three lower fingers to the rear back through the wrist and forearm (Figure 2).
- (2) Rest the thumb on top of the middle finger when gripping the pistol. DO NOT exert any downward pressure (Figure 2).
- (3) Grip the pistol firmly but not so firmly that it makes the hand tremble.

b. Sight alignment.

- (1) When sighting, align the front-sight blade in the rear-sight notch with an equal amount of light on either side of the front sight and with the top of the front and rear sight even.
- (2) Relax as much as possible.
- (3) Maintain the correct sight alignment and focus on the front sight.
- (4) Squeeze the trigger with a steadily increasing pressure straight to the rear, taking care not to disturb the sight alignment, until the hammer falls.

NOTE: When there is more than one target, choose the target that is the greatest danger. This is often the closest target.

5. Apply immediate action to reduce a stoppage.

Performance Steps

WARNING During the following procedures, always keep the pistol pointed in a safe direction.

- a. If the slide is fully forward, the hammer has fallen, and the pistol fails to fire, do the following:
 - (1) Recock the pistol with the nonfiring hand by pulling backward on the hammer, and try to fire again.
 - (2) If the pistol fails to fire, eject the round and chamber another round.

NOTE: In training, wait 10 seconds before ejecting the round and chambering another round.

- (3) Try to fire again.
 - (4) If the pistol again fails to fire, repeat steps 5a(2) and 5a(3) twice.
- b. If the slide is not fully forward and the pistol fails to fire, do the following:
 - (1) Take the finger off the trigger.
 - (2) Try to push the slide fully forward with the nonfiring hand.
 - (3) If the slide goes all the way forward, try to fire. If the pistol does not fire, do steps 5a(1) through 5a(4).
 - (4) If the slide fails to move all the way forward—
 - (a) Remove the magazine by pushing the magazine release button and pulling the magazine out of the bottom of the pistol grip.
 - (b) Inspect the chamber for foreign materials such as dirt, sand, or metal filings. Remove any foreign materials.
 - (c) Insert a new magazine and release the slide.
- c. If the slide goes all the way forward, try to fire. If the pistol does not fire, do steps 5a(1) through 5a(4).

6. Clear the pistol.

- a. Hold the pistol in the raised pistol position.
- b. Depress the magazine catch and remove the magazine.
- c. Pull the slide to the rear and lock it in its rearward position by pushing up on the slide stop.
- d. Point the pistol skyward and look into the chamber to be certain it is clear.
- e. Let the slide go forward and pull the trigger to release the spring tension.

Evaluation Preparation: Setup: During daylight on a firing range, provide 29 rounds of live ammunition and one dummy round, as well as items given in the conditions statement. During engagement of one of the targets, the Soldier will be given the dummy round to load along with five live rounds.

Brief Soldier: Tell the Soldier to use his own pistol. Tell the Soldier to fire six rounds at each target using the prone, standing-with-support, kneeling, standing-without-support, and crouching firing positions. Tell the Soldier to take immediate action to reduce a stoppage if a misfire occurs.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Assume the correct firing position:	—	—
a. Prone position.		
b. Standing-with-support position.		
c. Standing-without-support position.		
d. Kneeling position.		
e. Crouching position.		
2. Apply the fundamentals of marksmanship.	—	—
3. Engage targets—	—	—
a. From the prone position.		
b. From the standing-with-support position.		
c. From the standing-without-support position.		
d. From the kneeling position.		
e. From the crouching position.		

Performance Measures**GO****NO GO**

4. Apply immediate action to reduce stoppage.

5. Clear the pistol.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

FM 3-23.25

Subject Area 13: SUBMACHINE GUNS

Engage Targets With a VZ23 Submachine Gun
331-201-2201

Conditions: Given a VZ23 submachine gun and a magazine containing three dummy rounds of 9-mm x 19-mm Parabellum ammunition.

- Standards:** 1. Load and fire the weapon.
 2. Reduce a stoppage
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Pull the operating handle to the rear.
 - b. Put the weapon in the SAFE mode by pushing the safety lever, located behind the trigger, to the right.
 - c. Place a loaded magazine into the pistol grip until it locks.
 - d. Push the safety lever to the left (FIRE).
 - e. Pull the trigger halfway to fire semiautomatic or completely to fire automatic.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Pull the operating handle fully to the rear.
 - (2) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge.
 - (2) Place the weapon in the SAFE position.
 - (3) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon.
 - a. Press the magazine catch.
 - b. Pull the magazine out.
 - c. Pull the operating handle back halfway.
 - d. Inspect the chamber for rounds.
 - e. Pull the bolt completely to the rear.
 - f. Hold the operating handle while pressing the trigger and ease the bolt forward.
 - g. Push the safety to the right (SAFE).

Performance Measures

GO **NO GO**

- | | | |
|--|-------|-------|
| 1. Load and fire the weapon correctly. | _____ | _____ |
| 2. Reduce a stoppage. | _____ | _____ |
| 3. Clear the weapon within 10 seconds. | _____ | _____ |

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

**References
Required**

Related
ISBN 0710619251

Engage Targets With an M50 Submachine Gun

331-201-2202

Conditions: Given an M50 submachine gun and a magazine containing three dummy rounds of 9-mm x 19-mm ammunition.

- Standards:**
1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Pull the operating handle fully to the rear, and ease it forward until the bolt is caught by the sear.
 - b. Move the safety lever rearward (SAFE position).
 - c. Insert the loaded magazine into the magazine opening until the catch snaps into place.
 - d. Move the safety lever forward (FIRE position).
 - e. Aim, press the grip safety, and fire. The weapon will fire until either the trigger is released or the magazine is empty. The bolt will remain forward when the last round has been fired.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Cock the weapon by pulling the operating handle to the rear.
 - (2) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge.
 - (2) Place the weapon in the SAFE mode.
 - (3) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon.
 - a. Press the magazine catch to the rear.
 - b. Pull the magazine out of the receiver.
 - c. Pull the operating handle to rear until the bolt is caught by the sear and put the weapon in the SAFE mode.
 - d. Inspect the ejection port to ensure no cartridges are present.
 - e. Put the weapon in the FIRE mode, hold the operating handle, and squeeze the trigger, allowing the bolt to go forward until it stops.
 - f. Release the trigger, pull the operating handle slightly to the rear, squeeze the grip safety, and allow the bolt to go forward.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	_____	_____
2. Reduce a stoppage.	_____	_____
3. Clear the weapon within 10 seconds.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO- GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

**References
Required**

Related
ISBN 0710619251

Engage Targets With an MP5 Series Submachine Gun

331-201-2215

Conditions: Given an MP5A3 or MP5K submachine gun and a magazine containing three dummy rounds of 9-mm x 19-mm ammunition.

- Standards:**
1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Place the weapon in the SAFE position by rotating the selector to its uppermost position.
 - b. Hold the magazine by its base at a slight forward angle.
 - c. Seat the top front lip of the magazine into the receiver.
 - d. Insert the magazine into the housing.
 - e. Pull the magazine base to the rear until the magazine catch snaps into place.
 - f. Unfold the operating handle, pull it to the rear, and release it.
 - g. Rotate the selector down from the SAFE position (middle position for semiautomatic and lowest position for automatic fire).
 - h. Using a normal sight picture, aim and fire. The bolt remains forward when the last round is fired. The operating handle remains forward during firing.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Cock the weapon by pulling the operating handle to the rear and releasing it.
 - (2) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge, and release it.
 - (2) Place the weapon in the SAFE position.
 - (3) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon.
 - a. Press the magazine catch forward.
 - b. Remove the magazine.
 - c. Rotate the selector upward to the SAFE position.
 - d. Pull the operating handle to the rear, rotating it into the retaining notch.
 - e. Inspect the chamber.
 - f. Pull the operating handle to the rear, rotating it down out of the retaining notch, and release it.
 - g. Move the selector to the FIRE position.
 - h. Press the trigger and return the selector to SAFE.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	—	—
2. Perform immediate action.	—	—
3. Clear the weapon within 10 seconds.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References
Required

Related
ISBN 0710619251

Engage Targets With an UZI Submachine Gun

331-201-2216

Conditions: Given an UZI submachine gun and a magazine containing 3 dummy rounds of 9-mm x 19-mm ammunition.

- Standards:**
1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Press the grip safety.
 - b. Pull the operating handle to the rear, and release it.
 - c. Insert the magazine in the bottom of the grip and push up until the catch snaps.
 - d. Place the safety on SAFE (rear position).
 - e. Push the safety button forward to FIRE position, A for automatic and R for semiautomatic.
 - f. Grasp the pistol grip firmly, and depress the grip safety.
 - g. Aim and fire.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Cock the weapon by pulling the operating handle to the rear, and release it.
 - (2) Inspect the chamber and magazine.
 - (3) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge.
 - (2) Place the weapon on SAFE.
 - (3) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer of the ejected cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon within 10 seconds.
 - a. Remove the magazine.
 - b. Press the grip safety.
 - c. Pull the operating handle to the rear, and place weapon on SAFE.
 - d. Look into the ejection port to ensure no cartridge is present.
 - e. Take weapon off SAFE, and hold the operating handle with one hand.
 - f. Press the grip safety, and pull the trigger with one hand while allowing the bolt to go forward under your control.
 - g. Place the weapon on SAFE.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	_____	_____
2. Reduce a stoppage.	_____	_____
3. Clear the weapon within 10 seconds.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

**References
Required**

Related
ISBN 0710619251

Maintain a VZ23 Submachine Gun
331-201-2218

Conditions: Given a VZ23 submachine gun.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 3 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. Remove the receiver cap.
 - b. Remove the bolt assembly.
 - (1) Pull the operating handle back, starting the recoil spring out of the back of the receiver.
 - (2) Slide the bolt assembly rearward out of the receiver.
 - c. Remove the barrel.
 - (1) Use the bolt assembly as a tool to loosen the barrel locking nut by placing it around the barrel so the slots at the front of the bolt engage the lugs of the barrel locking nut.
 - (2) Unscrew the locking nut by turning the bolt counterclockwise, and remove the barrel nut and the front sling assembly.
 - (3) Pull the barrel forward from the receiver and barrel jacket assembly.
 - d. Disassemble the bolt group.
 - (1) Hold the bolt with the front facing away.
 - (2) Push forward and lift up on the recoil spring guide to remove.
 - (3) Pull the recoil spring guide and the ejector assembly from the rear of the bolt.
2. Reassemble the weapon.
 - a. Reassemble the bolt group.
 - (1) Insert the recoil spring guide and ejector assembly into the grooves on the rear of the bolt and push until the recoil spring goes slightly beyond the front of the bolt.
 - (2) Compress the recoil spring until the guide can be dropped into its groove in the bolt.
 - b. Replace the barrel.
 - (1) Push the barrel to the rear into the receiver and barrel jacket, rotating until the barrel is seated and cannot rotate.
 - (2) Replace the sling assembly over the barrel with the projecting lug forward.
 - (3) Tighten the barrel locking nut using the bolt assembly.
 - c. Replace the bolt assembly.
 - (1) Start the bolt assembly into the receiver.
 - (2) Pull the trigger and slide the bolt forward.
 - d. Replace the receiver cap.
 - (1) Push the receiver cap against the recoil spring on the end of the receiver.
 - (2) Rotate the cap until it locks.
3. Perform a function check.
 - a. Safety check.
 - (1) Pull the operating handle to the rear and release.
 - (2) Push the safety lever to the right (SAFE).
 - (3) Squeeze the trigger (the bolt should not go forward).
 - b. Semiautomatic check.
 - (1) Push the safety lever to the left (FIRE).
 - (2) Squeeze the trigger halfway (the bolt should not go forward).
 - (3) Hold the trigger halfway, and pull the operating handle to the rear.
 - (4) Release the operating handle (the bolt should not go forward).
 - (5) Release the trigger.

Performance Steps

c. Automatic check.

- (1) Pull the trigger all the way to the rear (the bolt should go forward).
- (2) Holding the trigger all the way to the rear, pull the operating handle to the rear and release (the bolt should go forward).

Performance Measures

GO **NO GO**

- | | | |
|---|-------|-------|
| 1. Disassemble the weapon within 2 minutes. | _____ | _____ |
| 2. Reassemble the weapon within 3 minutes. | _____ | _____ |
| 3. Perform, in the proper sequence, a function check. | _____ | _____ |

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Maintain an M50 Submachine Gun **331-201-2219**

Conditions: Given an M50 submachine gun.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 3 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. Ensure the stock is folded.
 - b. Unscrew and remove the barrel nut.
 - c. Lay the weapon on the right side with the sling swivel up.
 - d. Slowly open the receiver, controlling the bolt, recoil spring, and recoil spring guide with one hand.
 - e. Lift the barrel out.
 - f. Pull the rear end of the recoil spring guide forward out of its seat, and remove the guide and spring and separate.
 - g. Lift the bolt out of the receiver.
2. Reassemble the weapon.
 - a. Place the bolt back into the right receiver shell.
 - b. With the long end of the recoil spring base down, insert the recoil spring and its guide into the bolt.
 - c. Place the rear end of the recoil spring guide into its seat in the rear of the receiver.
 - d. Lay the barrel onto its seat in the front end of the receiver, and ensure the notch on the barrel aligns with the ejection groove on the bolt.
 - e. Swing the receiver closed, and screw the barrel nut back into place.

NOTE: Ensure safety is in the SAFE position in order to close the receiver group.

3. Perform a function check.
 - a. Safety check.
 - (1) Pull the operating handle fully rearward, and ease it forward until the bolt is caught by the sear.
 - (2) Push the safety lever to the rear position (SAFE position).
 - (3) Squeeze the grip safety and press the trigger (the bolt should not go forward).
 - b. Automatic check.
 - (1) Push the safety lever to the forward position (FIRE position).
 - (2) Depress the grip safety and fully squeeze the trigger (the bolt should go fully forward).
 - (3) Keeping the trigger depressed, pull the operating handle fully rearward and release it (the bolt should go forward).
 - (4) Release the trigger, pull the operating handle slightly to the rear, squeeze the grip safety, and allow the bolt to go fully forward.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 2 minutes.	_____	_____
2. Reassemble the weapon within 3 minutes.	_____	_____
3. Perform, in the proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

**References
Required**

Related
ISBN 0710619251

Maintain an MP5 Series Submachine Gun
331-201-2231

Conditions: Given an MP5A3 or MP5K submachine gun.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 3 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. Ensure the weapon is in the SAFE mode (do not pull the trigger).
 - b. Remove the handguard retaining pin and the handguard.
 - c. Remove the stock retaining pin and the stock.
 - d. Allow the trigger group to hang down on its front pin.
 - e. Remove the trigger group retaining pin, and separate the trigger housing from the barrel and the receiver group.
 - f. Point the muzzle upward, pull the operating handle to the rear, and remove the bolt assembly.
 - g. Remove the guide rod and spring from the bolt carrier.
 - h. Turn the locking cam until the lug clears the carrier by turning the bolt head.
 - i. Remove the locking cam and firing pin with spring.
 - j. Place the selector switch in the UP position and pull out the selector switch.
 - k. Lift the trigger mechanism out of the trigger housing.
2. Reassemble the weapon.
 - a. Replace the trigger mechanism into the trigger housing.
 - b. Replace the selector switch into the trigger housing in the UP position until fully seated.
 - c. Rotate the selector switch down in the SAFE position.
 - d. Insert the locking cam and firing pin with spring into the bolt head.
 - e. Insert into the bolt carrier and then rotate it one-quarter turn.
 - f. Replace the guide rod and spring into the bolt carrier.
 - g. When the locking rollers are flush with the sides of the bolt head, insert the complete bolt assembly into the receiver.
 - h. Point the muzzle down, allowing the bolt to slide forward.
 - i. Join the trigger group to the receiver by inserting the retaining pin.
 - j. Swing the trigger group into place.
 - k. Slide the butt over the rear of the receiver, ensuring that the recoil spring enters the recess in the butt stock.
 - l. Replace the stock retaining pin in the receiver.
 - m. Replace the handguard.
 - n. Replace the handguard retaining pin.
3. Perform a function check.
 - a. Safety check.
 - (1) Cock the weapon and place the selector on SAFE.
 - (2) Depress the trigger (the hammer should not go forward).
 - b. Semiautomatic check.
 - (1) Place the selector in the middle position (semiautomatic fire).
 - (2) Depress the trigger and hold it to the rear (the hammer should fall).
 - (3) Keeping the trigger depressed, pull the operating handle to the rear, and release it (the hammer should not fall).
 - (4) Release the trigger, and depress it again (the hammer should fall).
 - c. Automatic check.
 - (1) Place the selector in the lowest position (automatic fire).

Performance Steps

- (2) Pull the operating handle to the rear and release it.
- (3) Depress the trigger (the hammer should fall).
- (4) Keeping the trigger depressed, pull the operating handle to the rear and release (the hammer should fall).
- (5) Release the trigger, and depress it again (the hammer should not fall).
- (6) Place the selector on SAFE.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 2 minutes.	_____	_____
2. Reassemble the weapon within 3 minutes.	_____	_____
3. Perform, in the proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Maintain an UZI Submachine Gun
331-201-2232

Conditions: Given an UZI submachine gun.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 3 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. Remove the cover.
 - (1) Press the cover latch.
 - (2) Raise the cover and remove it from the receiver.
 - b. Remove the bolt by pulling it slightly to the rear and swinging its front end up and out of the receiver.
 - c. Disassemble the bolt and the recoil spring.
 - (1) Separate the bolt and the recoil spring from the receiver.
 - (2) Separate the bolt and the recoil spring.
 - d. Remove the barrel.
 - (1) Press in the barrel nut lock.
 - (2) Unscrew the barrel nut.
 - (3) Pull the barrel forward and out of the receiver.
 - e. Push out the trigger group retaining pin.
 - f. Pull the trigger group down from the receiver.
2. Reassemble the weapon.
 - a. Replace the trigger group.
 - (1) Assemble the trigger group to the receiver.
 - (2) Replace the trigger group retaining pin.
 - b. Replace the barrel.
 - (1) Insert the barrel and turn until it is seated.
 - (2) Screw in the barrel nut until it engages the barrel nut lock.
 - (3) Press in on the barrel nut lock, and tighten the barrel nut lock until it stops.
 - (4) Release the barrel nut lock.
 - c. Assemble the bolt and the recoil spring.
 - (1) Assemble the recoil spring to the bolt.
 - (2) Insert the bolt and the recoil spring into the receiver.
 - d. Replace the bolt by sliding the bolt slightly to the rear and simultaneously pressing the front end down and into the receiver.
 - e. Replace the receiver cover.
 - (1) Lower it over the receiver.
 - (2) Press the cover down until it is locked by the cover latch.
3. Perform a function check.
 - a. Safety check.
 - (1) Try to pull the operating handle to the rear without depressing the grip safety (the operating handle should not move to the rear).
 - (2) Press in on the grip safety.
 - (3) Pull the operating handle to the rear, and release it.
 - (4) Place the selector lever on SAFE.
 - (5) Press the grip safety and pull the trigger simultaneously (the bolt should not go forward).
 - (6) Release the grip safety and the trigger.

Performance Steps

- b. Semiautomatic check.
 - (1) Place the selector lever in the middle position on R (semiautomatic fire).
 - (2) Press the grip safety and pull the trigger (the bolt should go forward).
 - (3) Keeping the grip safety and the trigger depressed, pull the operating handle to the rear and release it (the bolt should not go forward).
 - (4) Release the trigger and depress it again (the bolt should go forward).
- c. Automatic check.
 - (1) Place the selector lever in the forward position on A (automatic fire).
 - (2) While pressing in on the grip safety, pull the operating handle to the rear and release it.
 - (3) Pull the trigger (the bolt should go forward).
 - (4) Keeping the grip safety and the trigger depressed, pull the operating handle to the rear and release it (the bolt should go forward).

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 2 minutes.	_____	_____
2. Reassemble the weapon within 3 minutes.	_____	_____
3. Perform, in the proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Subject Area 14: CARBINES, RIFLES, AND SHOTGUNS

Zero an M4 or M4A1 Carbine

071-100-0001

Conditions: On a 25-meter range, given an M4 or M4A1 carbine; 18 rounds of 5.56-mm ammunition; a 25-meter zero target; and sandbags for support.

Standards: Fired and adjusted sights on the M4 or M4A1 carbine so that a three-round shot group(s) centered on the white dot at the center of the zero target. Use 18 rounds or less.

Performance Steps

1. Establish a mechanical zero for the carbine.

- a. Flip up the unmarked, long-range aperture on the rear sight.

NOTE: Do not move the front sight post at this time.

- b. Center the rear sight aperture by turning the windage knob left or right. Align the index mark on the 0-2 aperture with the centerline on the windage scale and the mark on the receiver.
 - c. Rotate the elevation knob counterclockwise (down) until the range scale stops on the 300-meter mark (6/3). Take the rear sight all the way down until you hear the last whole "click" before it bottoms out.
 - d. Rotate the elevation knob two clicks clockwise (up) past the 300-meter setting. Leave elevation knob on the 300-meter setting (6/3). Make any further elevation corrections to the front sight post only.

NOTE: The sight picture is obtained by aligning the rear sight and the front sight with the proper aiming point for your target. The sight picture depends on sight alignment and placement of the aiming point.

2. Establish a correct sight picture.

- a. Check to ensure the carbine side of the 25-meter target is facing you.
 - b. Assume a supported fighting position.
 - c. Load the weapon.
 - d. Align the sights.
 - (1) Center the top of the front sight post in the center of the rear sight.
 - (2) Draw an imaginary horizontal line through the center of the rear aperture so that the top of the front sight post touches the line.
 - (3) Draw an imaginary vertical line through the center of the rear aperture that bisects the front sight post.
 - (4) Verify the sight picture.

NOTE: When you concentrate on the front sight post, the rear sight aperture will be blurred.

- e. Align the aiming point.
 - (1) Aim at target center.
 - (2) Position the top of the front sight post center mass of the scaled silhouette target.
 - (3) Confirm that an imaginary vertical line drawn through the center of the front sight post splits the target.
 - (4) Confirm that an imaginary horizontal line drawn through the top of the front sight post splits the target.

3. Establish a three-round shot group 4 centimeters or less in diameter.

- a. Fire a three-round shot group at the target.
 - b. Triangulate the shot group on the target.
 - c. Repeat a and b until the shot group is 4 centimeters or less in diameter.

NOTE: Vertical and horizontal lines divide the target. It also has pictures of the front and rear sights with a direction arrow to assist you with adjusting the sights.

4. Adjust the sights to move the shot group to the white dot in the center of the target.

NOTE: Do not adjust the sights if the shot group meets the standard.

Performance Steps

- a. If your shot group is not in the center of the bull's eye, use the squares on the target to calculate the number of clicks required to move your next shot group close to the white dot. The numbered squares around the edges of the target each represents a click on the sight.
 - (1) Elevation. One click will move the strike of the bullet up or down one square on the target sheet.
 - (a) To move the shot group down, rotate the front sight post clockwise. To move the shot group up, rotate the front sight post counterclockwise.
 - (2) Windage. Three clicks will move the strike of the bullet one square left or right.
 - (a) To move the shot group to the left, turn the windage knob counterclockwise.
 - (b) To move the shot group to the right, turn the windage knob clockwise.
- b. Keep track of adjustments.
- c. Fire a three-round shot group.
- d. Repeat step a until the shot group centers on the white dot in the center of the target.
- e. Rotate the rear sight elevation knob counterclockwise (down) two clicks to the 300-meter setting. The weapon is zeroed for 300-meter battlesight.
- f. Compute and record battlesight zero. See the example shown in Figure 1.

Evaluation Preparation: Setup: On a 25-meter firing range, the Soldier has an assigned rifle and magazine. Give the Soldier 18 rounds of 5.56-mm ball ammunition, a sandbag for support, and a rifle shot group analysis card.

NOTE: You can train rifle marksmanship skills using any and all rifle marksmanship training devices (such as Weaponeer, Basic Rifle Marksmanship (DVC07-57). The live-fire evaluation of a Soldier's ability to zero the rifle requires firing on the standard zero range. The performance of this task for the Common Task Test (CTT) can be done in conjunction with live-fire on the standard zero range or during a unit weapon qualification firing cycle.

Brief Soldier: Tell the Soldier to battlesight zero the rifle using no more than 18 rounds. Provide a scenario that requires the Soldier to establish a mechanical zero.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Established a mechanical zero for the carbine.	_____	_____
a. Flipped up the unmarked, long-range aperture on the rear sight.		
b. Centered the rear sight aperture by turning the windage knob left or right.		
c. Rotated the elevation knob counterclockwise (down) until the range scale stops on the 300-meter mark (6/3).		
d. Rotated the elevation knob two clicks clockwise (up) past the 300-meter setting.		
2. Established a correct sight picture.	_____	_____
a. Checked to ensure the carbine side of the 25-meter target was facing you.		
b. Assumed a supported fighting position.		
c. Loaded the weapon.		
d. Aligned the sights.		
e. Aligned the aiming point.		
3. Established a three-round shot group 4 centimeters or less in diameter.	_____	_____
a. Fired a three-round shot group at the target.		
b. Triangulated the shot group on the target.		
c. Repeated steps a and b until the shot group measured 4 centimeters or less in diameter.		
4. Adjusted the sights to move the shot group center to the white dot in the center of the target.	_____	_____

Performance Measures

GO **NO GO**

- a. If your shot group was not in the center of the bull's eye, used the squares on the target to calculate the number of clicks required to move your next shot group close to the white dot. (The squares are numbered around the edges of the target to help you see how many clicks you need to move the shot group to the white dot.)
- b. Tracked adjustments.
- c. Fired a three-round shot group.
- d. Repeated a until shot group centered on the white dot in center of the target.
- e. Rotated rear sight elevation knob counterclockwise (down) two clicks to the 300-meter setting.
- f. Computed and recorded battlesight zero (see example below).

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

DVC 07-57

TM 9-1005-319-10

Construct Field-Expedient Firing Aids for an M4 or M4A1 Carbine
071-100-0002

Conditions: Given an M4 or M4A1 carbine, sector fire, cutting tool, items to construct firing aids such as stakes, sticks, and logs or boards.

Standards: Constructed and placed firing aids to mark your sector of fire. Constructed and placed firing aids to control elevation and direction of the carbine so that rounds impact on predetermined targets within your assigned sector of fire.

Performance Steps

- 1. Place stakes to mark the left and right limits of your sector of fire.
 - a. Select sturdy stakes, sticks, or tree limbs 1 to 1 1/2 inches in diameter and about 18-inches in length.
 - b. Drive a stake into the ground to mark the left and right sector limit. Leave enough of the stakes above ground to act as a stop to keep the rifle from being pointed and fired out of the sector.
- 2. Place aiming stakes to engage preselected targets in your sector of fire.
 - a. Locate probable enemy positions or likely avenues of approach within your sector.
 - b. Select forked tree limbs 12- to 14-inches long.
 - c. Drive one stake into the ground near the edge of the fighting position. The stock of the rifle will rest on this stake. It should be high enough for the rifle stock to fit against your shoulder.
 - d. Place additional stakes forward of the stock stake and align each with a target or avenue of approach. Drive each stake firmly into the ground. Adjust them so that when the carbine is placed on the stock and forward stake and fired, the fire will strike its intended target.

Evaluation Preparation: Setup: At the test site, provide a prepared fighting position, an M4 or M4A1 rifle one magazine with ammunition, forked stakes and sticks. Show the Soldier his sector of fire and the targets to be laid on.

Brief Soldier: Tell the Soldier that he must emplace the M4or M4A1 rifle using the field-expedient method with the materials provided.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Placed stakes to mark the left and right limits of your sector of fire.	—	—
2. Placed aiming stakes to engage pre-selected targets in your sector of fire.	—	—

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References	Related
Required	FM 21-75

Perform a Function Check on an M4 or M4A1 Carbine **071-100-0005**

Conditions: Given an M4 or M4A1 carbine that you must confirm is operable.

Standards: Performed an operational check, ensuring that the carbine operates properly with the selector switch in each position.

Performance Steps

1. Check to ensure carbine is clear and the selector lever is on SAFE.
2. Check M4 or M4A1 carbine with selector lever in the SAFE position.
 - a. Pull the charging handle to the rear and release it.
 - b. Place the selector lever in the SAFE position.
 - c. Squeeze the trigger (the hammer should not fall).
 - d. Stop the function check if the carbine fails to function properly. Turn in malfunctioning carbine to unit armorer.
3. Check M4 or M4A1 carbine with selector lever in the SEMI position.
 - a. Place the selector lever in the SEMI position.
 - b. Squeeze the trigger, holding it to the rear (the hammer should fall).
 - c. Continue to hold the trigger to the rear while pulling the charging handle to the rear and releasing the charging handle.
 - d. Release the trigger with a slow, smooth motion until the trigger is fully forward (the hammer should not fall).
 - e. Squeeze the trigger (the hammer should fall).
 - f. Stop the function check if the carbine fails to function properly. Turn in malfunctioning carbine to unit armorer.
4. Check M4A1 carbine with selector lever in the AUTO position.
 - a. Place the selector lever in the AUTO position.
 - b. Pull the charging handle to the rear and release it.
 - c. Squeeze the trigger; the hammer should fall.
 - d. Hold the trigger to the rear and cock the weapon.
 - e. Fully release the trigger then squeeze it to the rear again; the hammer should not fall.
 - f. Stop the function check if the carbine fails to function properly. Turn in malfunctioning carbine to unit armorer.
5. Check M4 carbine with selector lever in the BURST position.
 - a. Place the selector lever in the BURST position.
 - b. Pull the charging handle to the rear and release it.
 - c. Squeeze the trigger and hold it to the rear; the hammer should fall.
 - d. Continue to hold the trigger to the rear; pull the charging handle to the rear and release it three times.
 - e. Release the trigger.

Evaluation Preparation: Setup: Have Soldiers use their assigned rifles and magazines.

Brief Soldier: Tell the Soldier to perform a function check and to tell the evaluator if the rifle malfunctions.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Checked an M4 or M4A1 rifle with the selector lever in the SAFE position, verifying the hammer did not fall.	—	—

Performance Measures**GO** **NO GO**

2. Checked an M4 or M4A1 rifle with the selector lever in the SEMI position, verifying the hammer fell.

NOTE: Perform either step 3 or 4, as appropriate.

3. Checked an M4 or M4A1 rifle with the selector lever in the AUTO position, verifying the hammer did not fall.

4. Checked an M4 or M4A1 rifle with the selector lever in the BURST position, verifying the hammer fell.

5. Stopped the function check any time the rifle did not function properly, and notified the evaluator.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

TM 9-1005-319-10

Correct Malfunctions of an M4 or M4A1 Carbine **071-100-0008**

Conditions: Given a loaded M4 or M4A1 carbine that has stopped firing and a small arms accessory case with the following cleaning materials: clean wiping rags; bore brush; chamber brush; tooth brush; cleaning rod; small arms swabs; pipe cleaners; cleaner, lubricant, preservative (CLP); and lubricating oil, arctic weather (LAW).

Standards: Eliminated the stoppage so that firing resumed.

Performance Steps

1. Perform immediate action.

NOTE: If your carbine malfunctions, remember S-P-O-R-T-S. This key word will help you remember these actions in sequence: slap, pull, observe, release, tap, shoot.

- a. Slap upward on the magazine to make sure it is properly seated.
- b. Pull the charging handle all the way back.
- c. Observe the ejection of the case or cartridge. Look into the chamber and check for obstructions.
- d. Release the charging handle to feed a new round in the chamber. DO NOT ride the charging handle.
- e. Tap the forward assist.
- f. Try to fire. If the carbine still does not fire, inspect it to determine the cause of the stoppage or malfunction, and take appropriate remedial action.

2. Perform remedial action. If the carbine still fails to fire after performing Steps 1a through 1f, check the chamber for a jammed cartridge case.

- a. If a cartridge case is in the chamber, tap it out with a cleaning rod
- b. Attempt to fire. If the carbine still fails to fire, perform procedures to correct a mechanical malfunction.
- c. Correct a mechanical malfunction.
 - (1) Clear the carbine.
 - (2) Disassemble the carbine.
 - (3) Inspect for dirty, corroded, missing, or broken parts.
 - (4) Clean dirty or corroded parts.
 - (5) Replace missing or broken parts.
 - (6) Assemble the carbine.
 - (7) Perform a function check.
 - (8) Load and fire the carbine.

Evaluation Preparation: Setup: Provide an M4 or M4A1 carbine loaded with dummy ammunition.

Brief Soldier: Tell the Soldier that the rifle has stopped firing. Tell the Soldier that the weapon is cool and that he or she is to perform the immediate or remedial actions on the rifle. All steps must be performed in the proper sequence.

Performance Measures

1. Performed immediate action.
2. Performed remedial action.

GO **NO GO**

_____ _____
_____ _____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
TM 9-1005-319-10

Engage Targets With an SKS Carbine

331-201-2206

Conditions: Given an SKS carbine, three dummy rounds of 7.62-mm x 39-mm (M1943) ammunition, and a stripper clip.

Standards: 1. Load and fire the weapon.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Rotate the safety forward until it is parallel with the stock (SAFE position).
 - b. Pull the operating handle back, and release it. If the magazine is empty, the bolt will remain open.
 - c. Insert a stripper clip into the clip guides at the top front of the bolt carrier.
 - d. Press the cartridges off the clip and into the magazine (the thumb should be as close to the base of the top cartridge as possible).
 - e. Remove the empty clip.

NOTE: If clipped ammunition is not available, individual cartridges can be placed on top of the magazine follower and pressed into the magazine until it is full.

- f. Pull the operating handle back, and release it (the bolt will go forward and chamber a cartridge).
 - g. Rotate the safety selector to the rear until it is parallel to the trigger (FIRE position).
 - h. Aim and fire. The bolt remains closed between rounds and open after the last round has been fired.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Pull the operating handle to the rear, and release it.
 - (2) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge and release it.
 - (2) Place the weapon in the SAFE position.
 - (3) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Replace the ammunition.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon.
 - a. Place the weapon in the SAFE position.
 - b. Pull back the magazine catch, and allow the magazine to swing open.
 - c. Remove all cartridges.
 - d. Close the magazine.
 - e. Pull the operating handle to the rear to eject the cartridge.
 - f. Inspect to ensure no cartridges remain the magazine, barrel, or receiver.
 - g. Close the bolt.
 - (1) Open the magazine again and pull to the rear on the operating handle and release it, OR
 - (2) Pull the operating handle to the rear, press down on the magazine platform slightly, and then release the operating handle.
 - h. Move the safety to the FIRE position.
 - i. Press the trigger.
 - j. Place the weapon in the SAFE position.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	_____	_____
2. Reduce a stoppage.	_____	_____
3. Clear the weapon within 10 seconds.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Engage Targets With a G3A4 Rifle

331-201-2207

Conditions: Given a G3A4 rifle and a magazine containing 3 dummy rounds of 7.62-mm x 51-mm ammunition.

- Standards:** 1. Load and fire the weapon.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Hold the magazine by its base.
 - b. Insert the magazine into the housing.
 - c. Unfold the operating handle, pull it to the rear, and release it.
 - d. Rotate the selector from the SAFE position to (E) for semiautomatic to (F) for full automatic fire.
 - e. Aim and fire. (The bolt remains forward when the last round is fired. The operating handle remains forward during firing.)
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Tap upward on the magazine bottom.
 - (2) Unfold the operating handle, pull it to the rear, and release it.
 - (3) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge.
 - (2) Release the operating handle and allow the bolt to go forward under its own spring tension.
 - (3) Place the weapon on SAFE.
 - (4) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon within 10 seconds.
 - a. Place the selector on SAFE.
 - b. Press the magazine catch forward.
 - c. Remove the magazine.
 - d. Pull the operating handle to the rear, rotating it into the retaining notch.
 - e. Inspect the chamber.
 - f. Pull the operating handle to the rear, rotating it down and out of the retaining notch, and release it.
 - g. Move the selector to the FIRE position.
 - h. Press the trigger and return the selector to SAFE.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	—	—
2. Reduce a stoppage.	—	—
3. Clear the weapon within 10 seconds.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References
Required

Related
ISBN 0710619251

Engage Targets With an AK Rifle

331-201-2208

Conditions: Given an AK rifle and a magazine containing 3 dummy rounds of 7.62-mm x 39-mm (M1943) ammunition.

- Standards:**
1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Insert the magazine into the receiver, tilted forward, allowing the top front lug of the magazine to seat in the recess of the magazine well.
 - b. Swing the magazine rearward until the catch snaps into place.
 - c. Ensure the selector is in the middle or the bottom firing position.
 - d. Pull the bolt to the rear and allow it to go forward under its own spring tension, chambering a round.
 - e. Aim and fire the weapon.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Tap upward on the magazine bottom.
 - (2) Pull the operating handle to the rear, and release the operating handle, allowing the bolt to go forward under its own spring tension.
 - (3) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge.
 - (2) Release the operating handle, and allow the bolt to go forward under its own spring tension.
 - (3) Place the weapon on SAFE.
 - (4) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the cartridge of the primer has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon within 10 seconds.
 - a. Press the magazine catch toward the magazine.
 - b. Remove the magazine.
 - c. Ensure the selector is not on SAFE so you can pull the operating handle fully to the rear and inspect the receiver and chamber for rounds.
 - d. Release the operating handle, allowing the bolt to go forward under its own spring tension.
 - e. Press the trigger and return the selector to SAFE.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	_____	_____
2. Reduce a stoppage.	_____	_____
3. Clear the weapon within 10 seconds.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

**References
Required**

Related
ISBN 0710619251

Engage Targets With an M1200 Shotgun

331-201-2213

Conditions: Given an M1200 shotgun and three dummy rounds of 12-gauge ammunition.

Standards: 1. Load and fire the weapon.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Place the safety in the locked position (ON).
 - b. Load two cartridges into the magazine.
 - c. Release the disconnecter assembly.
 - d. Retract the slide and push it forward to chamber one cartridge.
 - e. Place the third cartridge in the magazine.
 - f. Push the safety to the unlocked position (OFF).
 - (1) Aim and pull the trigger to fire.
 - (2) Pull the slide to the rear to eject the spent round and then push the slide forward to load a new round into the chamber.
 - (3) Repeat the steps in 1f(1) and 1f(2) until weapon is empty.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Pull the slide to the rear to eject the round in the chamber.
 - (2) Push the slide forward to chamber another round.
 - (3) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the slide to the rear, observing the extraction and ejection of the round.
 - (2) Place the weapon in the SAFE mode.
 - (3) Inspect the primer of the round.
 - (a) If the primer has been struck, the ammunition is probably at fault. Replace the ammunition.
 - (b) If the primer has not been struck, the weapon is probably at fault. Clear and inspect the weapon for serviceability.
3. Clear the weapon.
 - a. Place the weapon in the SAFE mode.
 - b. Remove the cartridges from the magazine.
 - (1) Push down on the carrier assembly.
 - (2) Depress the cartridge cutoff.

NOTE: Lift up slightly on the cartridge base to clear the carrier assembly.

- (3) Remove the cartridges.
- c. Release the disconnecter assembly.
- d. Pull the slide to the rear.

CAUTION: Make certain the magazine follower is visible to ensure that no shells remain in the magazine. With the breech open, inspect the chamber to ensure it is empty.

- e. Push the slide forward, and pull the trigger.

Performance Measures

1. Load and fire the weapon correctly.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

GO NO GO

____ ____
____ ____
____ ____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required**

TM 9-1005-303-14

Related

Engage Targets With an FN FAL Rifle

331-201-2214

Conditions: Given a FN FAL rifle and a magazine containing 3 dummy rounds of 7.62-mm x 51-mm ammunition.

- Standards:**
1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Rotate the selector to SAFE.
 - b. Grasp the magazine by its base, holding it at a slight forward angle; the front magazine lip should be seated in the receiver.
 - c. Insert the magazine into the magazine housing.
 - d. Pull the bottom of the magazine rearward until the catch snaps into place.
 - e. Pull the operating handle to the rear, and release it.
 - f. Rotate the selector from the SAFE position (down for semiautomatic or forward for full automatic fire).
 - g. Aim and fire. If the weapon does not fire because of failure to properly chamber, adjust the gas regulator.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Tap upward on the magazine bottom.
 - (2) Pull the operating handle to the rear, and release it.
 - (3) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle, to the rear, observing the extraction and ejection of the cartridge.
 - (2) Release the operating handle and allow the bolt to go forward under its own spring tension.
 - (3) Place the weapon on SAFE.
 - (4) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon within 10 seconds.
 - a. Place the weapon on SAFE.
 - b. Press the magazine catch forward while rotating the magazine forward out of the receiver.
 - c. Pull the operating handle to the rear, and engage the bolt with the bolt catch.
 - d. Inspect the chamber to be sure no cartridges are present.
 - e. Pull the bolt slightly to the rear and allow the bolt to go forward.
 - f. Move the selector from SAFE.
 - g. Press the trigger.
 - h. Set the selector on SAFE.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	—	—
2. Reduce a stoppage.	—	—

Performance Measures**GO****NO GO**

3. Clear the weapon within 10 seconds.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Maintain an SKS Carbine
331-201-2222

Conditions: Given an SKS carbine.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 4 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

1. Disassemble the weapon.
 - a. Ensure the weapon is clear and in the SAFE position.
 - b. Remove the recoil spring assembly.
 - (1) Rotate the receiver cover retaining pin to the vertical position, and pull to the right.
 - (2) Remove the receiver cover by sliding it rearward.
 - (3) Pull the recoil spring assembly from the bolt carrier.
 - c. Remove the bolt and the bolt carrier.
 - (1) Pull the operating handle to the rear.
 - (2) Lift the bolt and the bolt carrier out of the receiver.
 - d. Separate the bolt from the bolt carrier.
 - e. Remove the gas cylinder tube and the piston.
 - (1) Rotate the gas cylinder tube lock until the handle is at a 45-degree angle to the rear.
 - (2) Lift the rear of the handguard to remove the gas cylinder tube and the gas piston.
 - (3) Lower the front end of the gas cylinder tube, and allow the gas piston to slide out.
 - f. Remove the gas piston extension and spring.
 - (1) Place your thumb in front of the rear sight base.
 - (2) Rotate the gas cylinder tube lock until vertical, and allow the gas piston extension and spring to expand slowly forward.
 - (3) Remove and separate the gas piston extension and spring.
 - g. Remove the trigger group.
 - (1) Ensure the weapon is in the SAFE position.
 - (2) Rotate the receiver cover retaining pin and the gas cylinder tube lock to the closed position.
 - (3) Turn the barrel and receiver group so the sights are down and the muzzle is to the left.
 - (4) Push in on the trigger group retaining lock.
 - (5) Pull the trigger group up and out.
 - h. Remove the magazine by pulling up and out.
 - i. Unlock the bayonet, and separate the barrel from the stock.
2. Reassemble the weapon.
 - a. Ensuring the barrel is in the inverted position, attach the stock to the barrel and lock the bayonet in the closed position.
 - b. Replace the magazine into the stock, leaving it open.
 - c. Replace the trigger group.
 - (1) Engage the pins at the front of the trigger group into the notches behind the magazine box.
 - (2) Swing the trigger group into position in the stock (seat it by a hand blow on the loop of the trigger guard).
 - (3) Move the safety to the FIRE position to ensure the catch is fully engaged.
 - d. Replace the gas piston extension and spring.
 - (1) Place the gas piston extension into the spring.
 - (2) Hold the gas cylinder tube lock in the vertical position.
 - (3) Insert the gas piston extension with spring back into its recess in front of the rear sight base.
 - (4) Push it back into the recess until it can be locked into place.

Performance Steps

- (5) Lock by rotating the gas cylinder tube lock to a 45-degree angle to the rear.
 - e. Replace the gas cylinder tube and the gas piston.
 - (1) Slide the gas piston, small end first, into the gas cylinder tube.
 - (2) Fit the large end of the gas cylinder tube over the gas cylinder.
 - (3) Swing the rear end of the gas cylinder tube into the rear sight base.
 - (4) Turn the gas cylinder lock down.
 - f. Replace the bolt and the bolt carrier.
 - (1) Connect the bolt and the bolt carrier together, and place the bolt and the bolt carrier into the receiver.
 - (2) Push down and forward all the way to seat.
 - g. Replace the recoil spring assembly.
 - (1) Insert the recoil spring assembly, curled end first, into the bolt carrier.
 - (2) Pull the receiver cover pin fully to the right.
 - (3) Slide the receiver cover into place from the rear.
 - (4) Secure the cover with the receiver cover pin.
 - (5) Rotate the pin down to the locked position.
 - h. Close the magazine.
3. Perform a function check.
 - a. Pull the operating handle to the rear, and hold it.
 - b. Press down on the magazine follower.
 - c. Allow the bolt to go forward.
 - d. Place the safety lever on SAFE.
 - e. Press the trigger (the hammer should not go forward).
 - f. Place the safety lever on FIRE.
 - g. Press the trigger (the hammer should go forward).

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 2 minutes.	_____	_____
2. Reassemble the weapon within 4 minutes.	_____	_____
3. Perform, in the proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Maintain a G3A4 Rifle
331-201-2223

Conditions: Given a G3A4 rifle.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 4 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

1. Disassemble the weapon.
 - a. Ensure the weapon is clear and in the SAFE position. DO NOT pull the trigger.
 - b. Remove the handguard retaining pin.
 - c. Pull down and remove the handguard.
 - d. Remove the stock retaining pins.
 - e. Remove the stock with recoil spring by pulling to the rear.
 - f. Allow the trigger group to hang down on its front pin.
 - g. Remove the retaining pin and the trigger group.
 - h. Point the muzzle upward, pull the operating handle to the rear, and remove the bolt assembly.
 - i. Holding the bolt carrier upside down with your left hand, turn the bolt head 90 degrees counterclockwise and pull it out of the carrier.
 - j. Turn the locking cam until the lug clears the carrier.
 - k. Remove the locking cam, firing pin, and spring.
 - l. Rotate the selector switch to the up position and remove it from right to left.
 - m. Lift up the trigger group and remove from the trigger housing.
2. Reassemble the weapon.
 - a. Replace the trigger group into the trigger housing.
 - b. Replace the selector switch.
 - c. Insert the firing pin with spring and locking cam into the bolt carrier. Ensure the lug on the locking cam aligns with the rounded side of the bolt carrier.
 - d. Push in on the locking cam, and rotate it 180 degrees.
 - e. Place the bolt head onto the locking cam and place the bolt head on a firm surface and strike the rear of the bolt carrier.
 - f. Hold the bolt carrier with your left hand, turn the bolt head slightly to the right, pulling it forward about one-fourth of an inch, and then rotate it fully to the right, taking care not to push the bolt head back into the carrier. If the bolt head goes back into the carrier, correct it by—
 - (1) Reversing the bolt unit and inserting it into the receiver as far as possible. This causes the rollers to retract into the bolt head, allowing the entire unit to go farther into the receiver.
 - (2) Remove the reversed bolt unit.
 - g. When the locking rollers are flush with the sides of the bolt head, insert the complete bolt assembly into the receiver.
 - h. Point the muzzle down, allowing the bolt to slide forward.
 - i. Attach and swing the trigger group up into place.
 - j. Slide the stock over the rear of the receiver, ensuring that the recoil spring enters the recess in the bolt carrier.
 - k. Replace the retaining pins in the receiver.
 - l. Replace the front handguard.
 - m. Replace the front handguard retaining pin.
3. Perform a function check.
 - a. Safety check.
 - (1) Pull the operating handle to the rear, and release it.
 - (2) Place the selector on SAFE.
 - (3) Pull the trigger (the hammer should not fall).

Performance Steps

- b. Semiautomatic check.
 - (1) Place the selector on semiautomatic fire (E).
 - (2) Pull the trigger, and hold it to the rear (the hammer should fall).
 - (3) Keeping the trigger depressed, pull the operating handle to the rear and release it (the hammer should not fall).
 - (4) Release the trigger, and pull it again (the hammer should fall).
- c. Automatic check.
 - (1) Place the selector on automatic fire (F).
 - (2) Pull the operating handle to the rear, and release it.
 - (3) Pull the trigger, and hold it to the rear (the hammer should fall).
 - (4) Keeping the trigger depressed, pull the operating handle to the rear and release it (the hammer should fall).
 - (5) Release the trigger, and pull it again (the hammer should not fall).

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 2 minutes.	_____	_____
2. Reassemble the weapon within 4 minutes.	_____	_____
3. Perform, in the proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required	Related
	ISBN 0710619251

Maintain an FN FAL Rifle
331-201-2224

Conditions: Given a FN FAL rifle.

Standards: 1. Disassemble the weapon within 4 minutes.
2. Reassemble the weapon within 6 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

1. Disassemble the weapon.
 - a. Ensure the weapon is clear, in the SAFE (S) position, and the sights to the rearmost position.
DO NOT pull the trigger.
 - b. Swing the rifle open.
 - (1) Press the vertical takedown lever to the rear or the horizontal takedown lever up.
 - (2) Hold the weapon by the handguard, and press the buttstock down.
 - c. Pull the receiver cover to the rear and off the receiver.
 - d. Remove the bolt.
 - (1) Grasp the rod extending from the rear of the bolt carrier; pull the bolt and the bolt carrier to the rear and out of the receiver.
 - (2) Hold the bolt carrier horizontally, and push the bolt back into the bolt carrier until the bolt drops.
 - (3) Press the end of the firing pin, dropping the bolt clear of the carrier.
 - e. Separate the upper and lower receiver groups.

CAUTION: To prevent personal harm when the upper and lower receiver are separated, ALWAYS have the selector in the SAFE position; otherwise, the hammer spring and the plunger could cause injury by flying out if the trigger were accidentally depressed.

 - (1) Unscrew and remove the pivot pin lock on the side of the weapon.
 - (2) Push and remove the pivot pin from the weapon.
 - (3) Separate the upper and lower receiver groups.
 - f. Remove the safety sear.
 - (1) Push up on the rear portion of the safety sear.
 - (2) Lift the safety sear up and out.
 - g. Remove the gas piston.
 - (1) Use the point of a cartridge, or a similar object, to force in the plunger on the side of the gas plug.
 - (2) Rotate and remove the gas plug, gas piston, and gas piston spring.
 - h. Disassemble the trigger housing group.
 - (1) Rotate the selector off S, and ride the hammer forward while covering the hammer spring housing with the hand.
 - (2) Rotate the selector straight up and remove.
 - (3) Remove the hammer spring and hammer spring housing.
 - (4) Pick up on the pin locking plate, and hold it at a 45-degree angle to remove the trigger pin and the hammer pin on the lower receiver.

NOTE: On newer models, the pin locking plate can be removed.

 - (5) Remove the hammer pin and hammer.
 - (6) Remove the sear, sear spring, plunger, trigger pin, and trigger.

2. Reassemble the weapon.
 - a. Reassemble the trigger housing group.
 - (1) Replace the trigger, sear, sear spring, and plunger.
 - (2) Hold the pin locking plate in place at a 45-degree angle.
 - (3) Replace the trigger pin.
 - (4) Replace the hammer and hammer pin.
 - (5) Push the locking plate into position.

Performance Steps

- (6) Replace the hammer spring and the hammer spring housing.
 - (7) Insert the selector and rotate it down to the SAFE position, then cock the hammer.
- CAUTION:** To prevent personal harm when the upper and lower receiver are assembled, ALWAYS have the selector in the SAFE position; otherwise, the hammer spring and the plunger could cause injury by flying out if the trigger were accidentally depressed.
- b. Replace the gas piston and the gas piston spring.
 - (1) Insert the gas piston and the gas piston spring into their tube, forcing them into place with the gas plug.
 - (2) With its lugs vertical, continue to push the gas plug in as far as possible.
 - (3) Depress the plunger, and rotate the gas plug to secure it in place.
 - c. Replace the safety sear.
 - d. Assemble the upper and lower receivers.
 - (1) Replace the pivot pin.
 - (2) Replace the pivot pin lock by screwing it in all the way.
 - e. Replace the bolt.
 - (1) Holding the bolt at an angle, insert it into the bolt carrier so the firing pin enters its hole in the rear of the carrier.
 - (2) While pressing in on the protruding end of the firing pin, push the bolt rearward until it seats in the bolt carrier.
 - f. Replace the bolt carrier.
 - (1) Ensure the bolt is forward in the bolt carrier.
 - (2) Hold the opened rifle muzzle down and align the rails of the bolt carrier with the grooves in the receiver.
 - (3) Slide the bolt carrier forward.
 - (4) Align the bolt cover with the groove in the receiver, and slide the cover forward.
 - g. Swing the rifle shut.
3. Perform a function check.
- a. Safety check.
 - (1) Pull the operating handle to the rear, and release it.
 - (2) Place the selector on S.
 - (3) Pull the trigger (the hammer should not fall).
 - b. Semiautomatic check.
 - (1) Place the selector on Semi.
 - (2) Pull the trigger, and hold it to the rear (the hammer should fall).
 - (3) Keeping the trigger depressed, pull the operating handle to the rear and release it (the hammer should not fall).
 - (4) Release the trigger and pull again (the hammer should fall).
 - c. Automatic check.
 - (1) Place the selector on Auto.
 - (2) Pull the operating handle to the rear and release it.
 - (3) Pull the trigger and hold it to the rear (the hammer should fall).
 - (4) Keeping the trigger depressed, pull the operating handle to the rear and release it (the hammer should have ridden forward).
 - (5) Release the trigger and pull again (the hammer should not fall).

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 4 minutes.	—	—
2. Reassemble the weapon within 6 minutes.	—	—
3. Perform, in the proper sequence, a function check.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

STP 31-18B34-SM-TG

**References
Required**

Related
ISBN 0710619251

Maintain an AK Rifle

331-201-2225

Conditions: Given an AK rifle.

Standards: 1. Disassemble the weapon within 1 minute.
2. Reassemble the weapon within 3 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. First press in on the serrated end of the recoil spring guide at the rear of the receiver cover.
 - b. While holding the guide in, lift the receiver cover off the receiver.
 - c. Push the recoil spring guide forward to disengage it from its seat at the rear of the receiver.
 - d. Pull the recoil spring assembly from the bolt carrier.
 - e. Remove the bolt carrier by pulling the operating handle fully to the rear and slightly upward.

NOTE: Selector switch on auto (center position) or semi (lowest position).

- f. Lift the bolt carrier out of the receiver.
- g. Remove the bolt by pushing it to the rear of the bolt carrier, allowing it to rotate slightly.
- h. Continue to rotate the bolt in the same direction until the operating lug is free of its cam path in the bolt carrier.
- i. Pull the bolt straight out of the bolt carrier.
- j. To remove the gas cylinder from the receiver, rotate the gas cylinder tube lock out of its detent to the vertical position.
- k. Pull up on the rear of the handguard, and remove the gas cylinder tube.

2. Reassemble the weapon.
 - a. Engage the front of the gas cylinder tube with the gas cylinder.
 - b. Push down on the rear of the handguard and replace the gas cylinder tube.

NOTE: Ensure the gas cylinder lock is in the vertical position.

- c. Rotate the gas cylinder tube lock downward into its detent to the locked position.
- d. Slide the bolt fully into the bolt carrier.
- e. Rotate the bolt so the operating lug is aligned with its cam path.
- f. Pull the bolt fully forward into the bolt carrier.
- g. Replace the bolt and the bolt carrier into the receiver by sliding the gas piston into the hole under the rear sight.
- h. Slide the bolt carrier forward until the carrier fits into its cuts at the rear of the receiver.
- i. Slide the bolt carrier fully forward.
- j. Insert the recoil spring into the bolt carrier, and seat the guide into the receiver.
- k. Replace the receiver cover by inserting its front end into the circular groove in the rear sight base.
- l. With the heel of your hand, tap down and forward on the receiver cover until the receiver cover is fully seated on the receiver.

3. Perform a function check.
 - a. Safety check.
 - (1) Place the selector on one of the fire positions. Pull the operating handle to the rear and release it.
 - (2) Place the selector up to the SAFE position.
 - (3) Pull the trigger (the hammer should not fall).
 - b. Semiautomatic check.
 - (1) Place the selector on semiautomatic.

NOTE: Selector is all the way down.

- (2) Pull the trigger and maintain pressure (the hammer should fall).

Performance Steps

- (3) While maintaining pressure on the trigger, pull the operating handle to the rear and release it (the hammer should not fall).
- (4) Release the trigger; you should hear a click. Then pull the trigger (the hammer should fall).
- c. Automatic check.
 - (1) Place selector on center position.
 - (2) Pull the operating handle to the rear and release it.
 - (3) Pull the trigger and maintain pressure (the hammer should fall).
 - (4) While maintaining pressure on the trigger, pull the operating handle to the rear and release it (the hammer should have ridden forward).
 - (5) Release the trigger and resqueeze the trigger (the hammer should not fall).

NOTE: The hammer was released when the bolt carrier went forward.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 1 minute.	_____	_____
2. Reassemble the weapon within 3 minutes.	_____	_____
3. Perform, in proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Maintain an M1200 Shotgun 331-201-2230

Conditions: Given an M1200 shotgun.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 4 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly.

1. Disassemble the weapon.
 - a. Remove the barrel and the bayonet band assembly.
 - (1) Remove the cap by turning it counterclockwise.
 - (2) Remove the barrel and the bayonet band assembly.
 - b. Remove the trigger guard group.
 - (1) Remove the trigger guard pin.
 - (2) Remove the trigger guard group.
 - c. Remove the fore end and breech bolt groups.
 - (1) Remove the slide arm bridge retaining screw.
 - (2) Remove the slide group and the breech bolt group from the receiver.
 - (3) Separate the breech bolt group from the slide group.
 - d. Remove the receiver and magazine group.
 - (1) Remove the ejector.

NOTE: When the breech bolt group is removed, the ejector will fall free of the support pin in the receiver.

- (2) Disassemble the magazine.

- (a) Remove the magazine plug.

CAUTION: Hold thumb and forefinger on the plug to retain pressure.

- (b) Remove the helical compression spring (magazine).

NOTE: DO NOT attempt to remove the magazine from the receiver.

- (c) Remove the magazine follower.

2. Reassemble the weapon.
 - a. Replace the receiver and magazine group.
 - (1) Reassemble the magazine.
 - (a) Replace the magazine follower.
 - (b) Replace the helical compression spring (magazine).
 - (c) Replace the magazine plug.
 - (2) Replace the breech bolt group, the ejector, and the slide arm bridge retaining screw.
 - (a) Replace the breech bolt group on the fore end of the slide group.
 - (b) Replace the breech bolt group and the slide group and ejector in the receiver.
 - (c) Replace the slide arm bridge retaining screw.
 - (d) Place the ejector between the bolt slide and the front end of the left side of the receiver.
 - (e) Push the ejector to the rear until the ejector end contacts the ejector support pin.
 - (f) Pry out on the ejector and seat the ejector on the ejector support pin.
 - b. Replace the trigger guard group.
 - c. Replace the trigger guard pin.
 - d. Replace the barrel and the bayonet band assembly.
 - (1) Replace the barrel and the bayonet band assembly.
 - (2) Replace the cap.
3. Perform a function check.
 - a. Place the safety in the locked position (ON).
 - b. Insert three dummy rounds into the weapon.

Performance Steps

- c. Press the trigger (the weapon should not fire).
- d. Place the safety in the unlocked position (OFF).
- e. Press the trigger (the weapon should fire).
- f. Pump the slide rearward and forward until all rounds are clear of the weapon and the magazine.
- g. Press the trigger and place the safety in the locked position (ON).

Performance Measures

1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 4 minutes.
3. Perform, in the proper sequence, a function check.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required
TM 9-1005-303-14

Related

Subject Area 15: ANTI-TANK WEAPONS

Perform Misfire Procedures on an M136 Launcher
071-054-0003

Conditions: Given an armed M136 launcher (AT4) that has misfired.

Standards: Apply misfire procedures so that the AT4 can be fired, or ensure the weapon cannot fire, then inform the supervisor of the misfire.

Performance Steps

- 1. Perform misfire procedures.
 - a. When the launcher fails to fire, immediately shout “MISFIRE.”
 - b. Continue to hold the launcher pointed in the area of the target.
 - c. Release the red safety catch.
 - d. Immediately recock the cocking lever, check the backblast area, aim, fully depress and hold down the red safety catch, and press the red trigger button.

NOTE: If the launcher still fails to fire, repeat steps 1a through 1d above.

- e. If the launcher again fails to fire, release the red safety catch and return the cocking lever to the SAFE (uncocked) position.
 - f. Remove the launcher from the shoulder while keeping the muzzle pointed toward the target area.

WARNING: If transport safety pin cannot be reinserted, do not move the weapon. Notify your noncommissioned officer in charge (NCOIC).

- g. While cradling the launcher with the left arm, reinsert the transport safety pin.

NOTE: In a training situation only, after inserting the transport safety pin, wait two minutes. Keep the launcher pointed toward the target area.

- h. Carefully lay the launcher on the ground, muzzle pointed toward the target area.

- 2. Immediately use another launcher to engage the target.

Evaluation Preparation: Setup: At the test site, provide an expended AT4 or a tracer trainer in the ready-to-fire configuration.

Brief Soldier: Tell the Soldier to assume a correct standing, ready-to-fire position with the launcher. Tell the Soldier to go through the firing procedure. Tell him to go through the misfire procedures.

Performance Measures	GO	NO GO
NOTE: The performance measures are scored in sequence.		
1. Shout “MISFIRE.”	—	—
2. Release the red safety catch.	—	—
3. Recock the cocking lever.	—	—
4. Try to refire after checking the backblast area.	—	—
5. Repeat performance measures 1 through 4 when the launcher fails to fire.	—	—
6. Return the red safety lever to the SAFE (uncocked) position.	—	—
7. Remove the launcher from the shoulder while keeping the muzzle pointed at the target area.	—	—
8. Replace the transport safety pin.	—	—

Performance Measures

GO

NO GO

9. Place the launcher on the ground with the muzzle pointed toward the target area.

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what was he did wrong and how to do it correctly.

References

Required

Related

FM 3-23.25

Engage Targets With an M136 Launcher

071-054-0004

Conditions: Given an M136 launcher (AT4) prepared for firing, engageable targets, and a requirement to engage such targets.

Standards: Destroy or disable targets with the M136 launcher.

Performance Steps

NOTE: The launcher can only be fired from the right shoulder.

1. Firing position.
 - a. Four types of firing positions are used when firing the M136 launcher.
 - (1) The standing position (Figure 1).



Figure 1. Standing Position

- (2) The kneeling position with two variations (Figure 2).

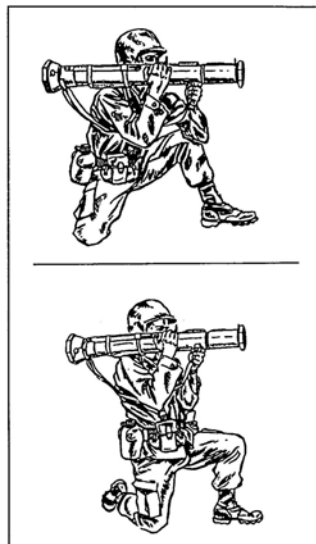


Figure 2. First and Second Kneeling Positions

Performance Steps

- (3) The sitting position with two variations (Figure 3).

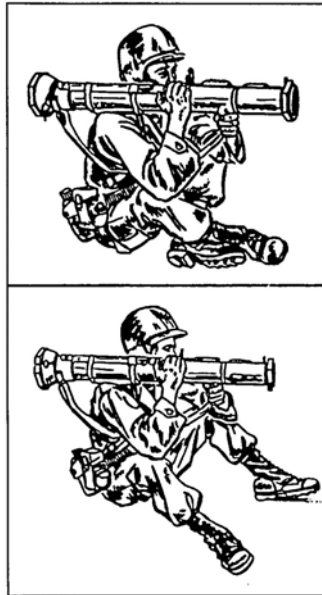


Figure 3. First and Second Sitting Positions

- (4) The prone position (Figure 4).

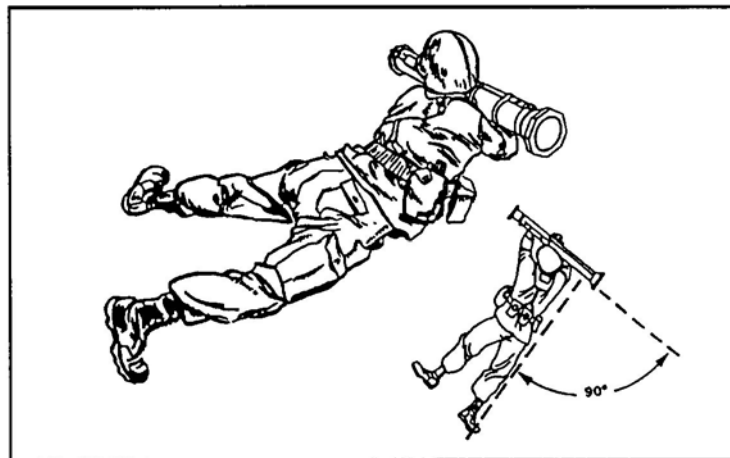


Figure 4. Prone Position

2. Use of the sights.

- a. Determine the range to the target. If the range is 250 meters or less, do not adjust the rear sight. If the range is more than 250 meters, adjust the rear sight to the required range.

WARNING: DO NOT place the eye against the rear sight when firing. Recoil may cause injury to the eye.

- b. Obtain the correct sight picture (Figure 5). Align and properly place the sights in relation to the target. In Figure 5, notice that the top center of the front sight posts is in the center of the rear sight peephole. Ensure that the white line on the front sight is just inside the peephole.

Performance Steps

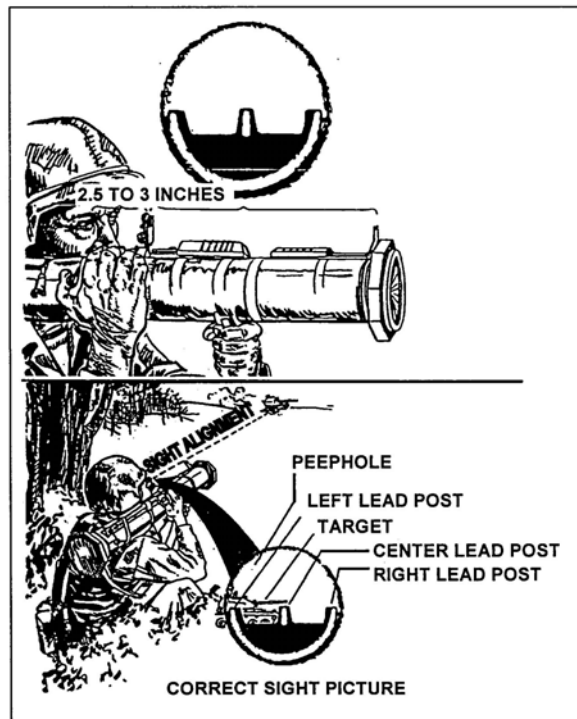


Figure 5. Correct Sight Picture

- (1) Stationary targets. Place the center post at the center of visible mass (A, Figure 6). This same procedure also applies for vehicles that are proceeding directly toward or away from the firer.

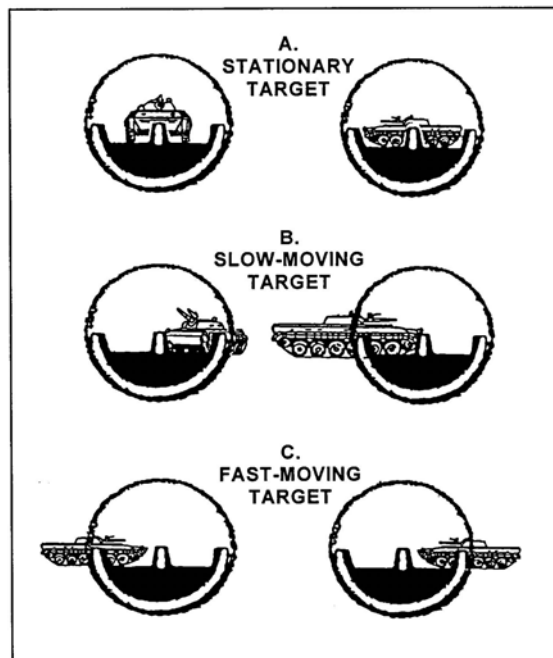


Figure 6. Correct Placement of the Front Sight Lead Posts

Performance Steps

- (2) Slow moving targets (less than 10 miles per hour). Place the center post on the front leading edge of the vehicle (B, Figure 6). This procedure also applies to vehicles moving at an oblique (at all speeds).
- (3) Fast moving targets (more than 10 mph).
 - (a) If the vehicle is moving from right to left, place the right hand lead post at the center of mass (C, Figure 6).
 - (b) If the vehicle is moving from left to right, place the left hand lead post at the center of mass (C, Figure 6).

3. Methods of engagement.

- a. Single firing. In single firing, a target is engaged by one Soldier firing one launcher with no succeeding shots (Figure 7). This method should be used only at ranges of 200 meters or less.



Figure 7. Single Firing

- b. Sequence firing. In sequence firing, the target is engaged by one Soldier equipped with two or more launchers (Figure 8). He observes the impact of the first round. If it is a hit, he continues to fire until the target is destroyed. If the first round was a miss, the Soldier applies burst-on-target corrections until the target is hit.



Figure 8. Sequence Firing

Performance Steps

- c. Pair firing. In pair firing, two Soldiers equipped with two or more rounds each engage a single target (Figure 9). The Soldier who sees the target first identifies it, announces the estimated range and the lead that he will use-...then he fires. The second Soldier observes the impact and announces a revised estimate of range and lead (if appropriate) and fires. Each Soldier continues exchanging range and lead information until the target is destroyed.



Figure 9. Sequence Firing by a Pair of Soldiers

- d. Volleying firing. In volley firing, a single target is engaged by more than one Soldier using the same sight data to fire one or more launchers (Figure 10). Volley firing should be used when the range to the target is known. Since more rounds are fired at the target, using this method increases the probability of hitting the target and obtaining a kill.



Figure 10. Volley Firing

Performance Steps

4. Target vulnerability.
 - a. An armored vehicle usually has its heaviest armor on the front slopes.
 - b. Gunners should try to engage the armored vehicle's weak points, which are the sides and the rear (Figure 11).

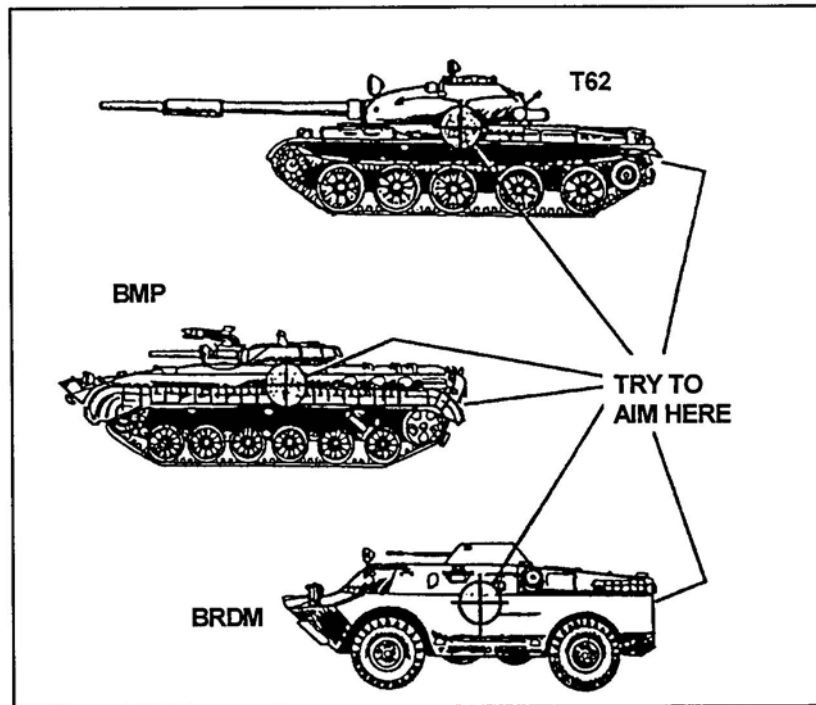


Figure 11. Vulnerable Points on an Armored Vehicle

Evaluation Preparation: Setup: At the test site, provide the Soldier with a tracer trainer, targets to be engaged, a replica of the sights, and pictures of the vehicles.

Brief Soldier: Tell the Soldier which firing position to use and which target to engage. Tell him that he must answer questions about firing the launcher.

Performance Measures

1. Assumed the given firing position.
 - a. Standing.
 - b. Kneeling.
 - c. Sitting.
 - d. Prone.
2. Adjusted the rear sight to the range when required.
3. Used the correct sight placement to engage the targets.
 - a. Stationary targets.
 - b. Slow-moving targets.
 - c. Fast-moving targets.
 - d. Oblique-moving targets.
 - e. Head-on or rear targets.
4. Answered the questions on the methods of engagement.

GO **NO GO**

— —

— —

— —

— —

Performance Measures**GO** **NO GO**

- a. Single firing.
- b. Sequence firing.
- c. Pair firing.
- d. Volley firing.

5. Answered the questions on a target's weak points.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier scores NO-GO, show him what was done wrong and how to do it correctly.

References**Required****Related**

FM 3-23.25

TM 9-1315-886-12

Maintain a Javelin
331-201-2233

Conditions: Given a command launch unit (CLU), a carry bag with all components, a CLU battery, a round of ammunition, a flashlight with batteries, a cleaning cloth, one ounce of detergent, one stiff-bristle brush, one quart of water, one 2-quart pail, and TM 9-1425-688-12.

Standards: Ensure that the CLU passes the operational check and that all components are clean and free of corrosion. Notify the supervisor of any upper echelon deficiencies.

Performance Steps

1. Inspect the CLU carry bag.
 - a. Inspect the carry bag for dirt, excessive wear, and damaged or missing hardware. Inspect the straps, pockets, drawstring, hook-pile tape, buckles, and fittings for excessive wear and for damaged or missing hardware.
 - b. Ensure that there is a lens-cleaning kit.
 - c. Ensure that there is a BA-5590/U battery.
2. Inspect the CLU body.
 - a. Inspect the main housing for damage, scratches, dents, or cracks.
 - b. Ensure that all the absorbers are there. Inspect them for damage.
 - c. Inspect the humidity indicator.
 - (1) Blue humidity indicator means that the internal moisture of the CLU is acceptable.
 - (2) White or pink humidity indicator means that the internal moisture level of the CLU is not acceptable.
 - d. Ensure that the detector Dewar cooler (DDC) is attached to the main housing.
3. Inspect the CLU interface connector.
 - a. Position the CLU on its left side with the rear of the CLU facing upward.
 - (1) Ensure the CLU interface connector cover and lanyard are present and the lanyard is not torn.
 - (2) Remove the protective cover from the CLU interface connector. Pull on the lanyard tab to ensure it makes a snug protective cover against the side of the CLU and that no interference exists when a round is connected.
 - (3) Check the area around the connector for cracks.
 - (4) Inspect the CLU interface connector for dirt, corrosion, or damaged or missing screws.
 - (5) Ensure that the connector is not stuck and giving a false CLU mated signal.
 - b. Inspect the round interface bracket, round interface catch, and alignment pin for damage.
 - c. Ensure the diopter adjust ring moves smoothly by rotating it all the way left and back to the right.
 - d. Inspect the CLU switches.
 - (1) Visually inspect the switches to ensure that they are not broken or missing.
 - (2) Inspect the rubber boots for dry rot.
 - (3) Operate each of the switches below to test their mechanical operation.
 - (a) CLU power switch.
 - (b) Left handgrip switches, which include the following:
 - Focus switch.
 - Sight select (SGT SEL) switch.
 - Filter (FLTR) switch.
 - Seeker trigger and trigger guard.
 - (c) Right handgrip switches, which include the following:
 - Gate adjust/contrast and brightness (GATE ADJ/CTRS & BRT) switch.
 - Attack select (ATTK SEL) switch.
 - Fire trigger.
 - e. Inspect the battery compartment.

Performance Steps

- (1) Position the CLU on its top, with the handgrips up and with the battery compartment cover facing you.
 - (2) Remove the battery cover bail by pushing it toward the main housing, using both hands with equal pressure.
 - (3) Remove the battery cover, and inspect it for corrosion, dirt, and physical damage. Suspend the battery cover by the strap from the bail. DO NOT let it swing or hit the CLU while it is suspended.
 - (4) Inspect the bail to ensure it provides tension to the battery cover.
 - (5) Inspect the battery compartment cover strap for tears.
 - (6) Inspect inside the battery compartment using a flashlight. Look for signs of corrosion, dirt, physical damage, and bent or broken battery connector pins.
 - f. Inspect the battery.
 - (1) Remove the white tape from the electrical connector.
 - (2) Inspect the connector for broken or loose terminals and signs of corrosion.
 - (3) Inspect the battery case for cracks or dents and any sign of leakage or external corrosion.
 - (4) Install the battery.
 - (a) Slide the battery into the battery compartment, making sure the battery engages with the battery interface connector.
 - (b) Replace the battery cover on the battery compartment and fasten the bail.
 - g. Inspect the outside surfaces of the eyecup for cracks, tears, holes, and dry rot.
 - h. Inspect the fold lines in the eyecup for excessive wear.
 - i. Check the eyecup operation.
 - (1) Place fingers around the outside surface of the eyecup in the same place the eye meets the cup. Compress the eyecup toward the CLU.
 - (2) Ensure the eyecup compresses easily and smoothly.
 - (3) Ensure the internal shutter opens when the eyecup is compressed and closes completely when the cup is released. While the eyecup is compressed, check the eyepiece lens for cleanliness.
4. Inspect the CLU lenses and covers.
 - a. Inspect the lens covers for dirt, cracks, or damage, particularly at the hinges. Ensure the shock absorber on the night vision sight (NVS) lens cover is securely attached and no pieces of material are missing.
 - b. Open the daysight and NVS lens covers.
 - c. Inspect the daysight and NVS lenses for dirt or internal moisture.
 5. Perform the CLU built-in-test (BIT).
 - a. Open the daysight lens cover.
 - b. Rotate the power switch to the NIGHT position.
 - c. Adjust the diopter adjust ring for best clarity of the CLU display.
 - d. Verify that the day and night indicators are lit.
 - e. Allow 2.5 minutes for the NVS to cool down.
 - f. After 2.5 minutes, verify that the night indicator goes out.
 - g. Turn the power switch to the TEST position and release.
 - h. Observe that all 14 indicators are lit for 5 seconds. The mirror cycles to DAY then NIGHT positions.
 - i. After 3 seconds, observe that all 14 indicators are out.
 - j. Observe that the software versions data is displayed.
 - k. Operate the triggers, as prompted. There is a 10-second window to respond. Once begun, failure to complete the trigger test results in a BIT error.
 - l. Observe that the checkerboard gray scale appears.
 - m. Operate the CLU switches, in any order. Observe the corresponding indicator lights when the switch is activated. If all indicators cannot be activated, rerun the BIT by setting the power switch to the TEST position.
 - n. Observe (after 30 seconds) that the DAY indicator is lit.

Performance Steps

6. Perform the CLU operational check.
 - a. Ensure that the NVS and the daysight lens covers are open.
 - b. Set the power switch to the NIGHT position.
 - c. Set the diopter adjust ring for best clarity of CLU display.
 - d. Verify that the DAY and NIGHT indicators are lit.
 - e. Press SGT SEL switch. Observe that the DAY indicator goes out, the wide field of view (WFOV) video appears, and that the WFOV indicator is lit.
 - f. Press SGT SEL switch. Observe that the WFOV indicator goes out, the narrow field of view (NFOV) video appears, and that the NFOV indicator is lit.
 - g. Press up on the FOCUS switch. Hold until the NFOV indicator begins to flash. Press down on the FOCUS switch. Hold until the NFOV indicator begins to flash again.
 - h. Select a target in the CLU display and adjust the focus for clear video using the FOCUS switch.
 - i. Adjust the contrast of the CLU display for clear video by pressing the GATE ADJ/CTRS & BRT switch left and right.
 - j. Adjust the brightness of CLU display for clear video by pressing the GATE ADJ/CTRS & BRT switch up and down.
 - k. Press the FLTR switch. Observe that the CLU display becomes darker and the FLTR indicator is lit.
 - l. Press the FLTR switch. Observe that the CLU display brightens and the FLTR indicator goes out.
 - m. Press the SGT SEL switch. Observe that the NFOV indicator goes out, the day field of view (FOV) appears, and the DAY indicator is lit.
 - n. Turn the power switch on the CLU to the OFF position.
 - o. Close the daysight and the NVS lens covers.
7. Remove the battery.
 - a. Ensure the power switch is set to the OFF position.
 - b. Release the bail from the battery cover.
 - c. Raise the battery cover, and remove the battery from the battery compartment.
 - d. Install the new battery, if required.
 - e. Replace the battery cover on the battery compartment, and fasten the bail.
 - f. Dispose of the used battery.
 - (1) Completely discharge the battery using the discharge switch. When operationally possible, store the battery in an approved storage site for at least five days before disposing of it in the general trash container.
 - (2) Batteries not discharged in this manner are designated as hazardous waste and must be packaged in accordance with approved packing procedures. Such batteries shall be turned into the Defense Reutilization and Marketing Office for disposal.

WARNING:

1. The BA-5590/U battery contains pressurized sulfur dioxide gas. It is highly toxic. The battery must not be abused in any way, which would cause it to rupture.
2. DO NOT operate the Saft America BA-5590/U battery for more than 3 hours at normal temperatures (50 to 120 degrees Fahrenheit [F]). If temperatures are between 50 and -20 degrees F, the operating life is reduced to 1 hour.
3. If the battery compartment becomes hot to the touch, power down the Javelin immediately. Allow the battery to cool at least 60 minutes before removing it.
4. Upon hearing a hissing sound (battery venting), immediately power down the Javelin and leave the area until any smell or signs of leaking gas have cleared from the area.

8. Inspect the round.
 - a. Ensure that the forward end cap is present. Inspect forward the end cap for broken or missing hardware.
 - b. Remove the battery coolant unit (BCU).
 - (1) Grasp the BCU shroud and lift up on the BCU latch. Slide the BCU toward aft end of the round to release it from the guide pins.

Performance Steps

- (2) Inspect the BCU for damage.

WARNING: The BCU contains a lithium-alloy thermal battery that is considered hazardous waste.

Disposal of the BCU after use must be in accordance with TM 43-0003-44.

- c. Inspect the pylon and guide pins for damage.
- d. Install the BCU.
 - (1) Remove the plastic plug that protects the internal gas bottle.
 - (2) Align the BCU onto the guide pins. The BCU is correctly connected when the BCU latch snaps into place.
- e. Inspect the carry handle for dirt or damage.
- f. Inspect the aft end cap for damage.
- g. Inspect the aft end cap's membrane for punctures.
- h. Inspect the launch tube assembly for dirt or damage.
- i. Inspect the shoulder pad for damage.
- j. Inspect the latch assembly for dirt, corrosion, or damage.
- k. Remove the protective cover and inspect the round interface connector for damage, dirt, or corrosion.
- l. Inspect the shoulder strap for proper routing of the strap through the buckle.
- m. Inspect the shoulder strap buckle and strap mounts for dirt or damage.
- n. If forward end cap was removed and replaced, perform steps 8n(1) through 8n(6) below, otherwise go to step 8o.
 - (1) Remove the locking pin by pulling straight up on the wire rope.
 - (2) Turn the forward end cap latch counterclockwise. Remove the forward end cap. If the forward end cap does not come off the round, press the manual release button until the hissing stops.
 - (3) Inspect the area around the seeker dome for dirt or debris. Tip the end of the round down to allow the debris to fall out.
 - (4) Align the handle of the forward end cap latch with the pylon.
 - (5) Slide the forward end cap onto the launch tube assembly (LTA) and turn the forward end cap latch clockwise to engage locks.
 - (6) Reinstall the locking pin into the hole in the forward end cap latch.
- o. Perform the Javelin connect check.
 - (1) Set the power switch on the CLU to the OFF position.
 - (2) Place the round on the ground with the latch assembly facing up.
 - (3) Place the round interface bracket in the round hooks. Slide the round forward and press down on the CLU to engage the CLU and the round interface connectors. The round and CLU are connected correctly when the latch release snaps into place.
 - (4) Press the latch release and disconnect the CLU from the round.
 - (5) Install the protective covers on the round interface connector and the CLU interface connector.

9. Clean the CLU and the round.

- a. Inspect the surfaces for a heavy coating of dirt or mud. If dirt or mud is visible go to step 9b. If slightly dirty; that is, dusty, proceed to step 9c.
- b. Rinse the area with clean water and wipe with a clean dry cloth.
- c. Clean all the metal parts on the CLU and the round with a clean dry cloth.
- d. Clean the rubber or synthetic parts using water.
- e. Dry all of the parts with a clean dry cloth.

10. Clean the lenses.

CAUTION:

1. DO NOT try to scrub lens surface. Optical coating may be damaged. Use the following procedure to clean dried-on mud or dirt.

2. DO NOT touch the lens with your hands or fingers. Wash hands before cleaning lenses. Natural oils produced by the skin are corrosive to lens coatings.

Performance Steps

- a. Clean hands of all dirt, oil, and contaminants with water and a mild detergent.
- b. Open the daylight and NVS lens covers, and depress the eyepiece to gain access to the eyepiece lens.

NOTE: If mud or dirt are on the lenses, go to step 10c. If only dust, fingerprints, or spittle are on lenses, go to step 10d.

- c. Pour clean water over the lens until dirt or mud is dissolved and loose. Repeat as necessary to remove mud or dirt.
- d. Clean the surface of lens.
 - (1) Remove the lens cleaning kit from the carry bag.
 - (2) Remove the lens paper from the foil envelope, and fold the lens paper in half.
 - (3) Place the lens paper in the center of the lens to be cleaned.
 - (4) Apply light pressure with your fingers, and begin to wipe from the center to the edge of the lens in an expanding circular motion.
 - (5) Reinspect the lens.
 - (a) If the lens requires further cleaning, turn the lens paper over and repeat cleaning.
 - (b) If the lens requires further cleaning, throw away the used lens paper, get another lens paper, and repeat cleaning process.
 - (6) Close the daylight and NVS lens covers.

11. Clean the CLU and the round interface connector.

- a. Remove the protective covers.
- b. Inspect the CLU and the round interface connectors for dirt or mud. If dirt or mud is visible, go to step 11c. If slightly dirty, go to step 11d.
- c. Rinse the CLU and the round interface connectors with clean water, and wipe them with a clean, dry cloth.
- d. Wipe the CLU and the round interface connectors with a clean, dry cloth.
- e. Dry the CLU and the round interface connectors with a clean, dry cloth.
- f. Replace the protective covers.

12. Clean the battery compartment.

- a. Release the bail from the battery cover.
- b. Wipe the battery compartment with a clean, dry cloth.
- c. Replace the battery cover on the battery compartment, and fasten the bail.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the conditions statement.

Brief Soldier: Tell the Soldier to perform maintenance on the Javelin.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Inspect the CLU carry bag.	—	—
2. Inspect the CLU.	—	—
3. Perform the CLU BIT.	—	—
4. Perform the CLU operational check.	—	—
5. Remove the battery.	—	—
6. Inspect the round.	—	—
7. Clean the CLU and the round.	—	—
8. Clean the lenses	—	—
9. Clean the CLU and the round interface connectors	—	—

Performance Measures**GO****NO GO**

10. Clean the battery compartment.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

TM 43-0003-44

TM 9-1425-688-12

Engage Targets With a Javelin

331-201-2235

Conditions: Given a Javelin prepared to fire.

Standards: Destroy or disable the target or the enemy withdraws.

Performance Steps

1. Assume a Javelin firing position.
 - a. Kneeling position.
 - (1) Kneel on the left side of the Javelin at the forward end, facing the direction of fire.
 - (2) Check the backblast area, and ensure no one is located in the backblast area.
 - (3) Grasp the left handgrip with the left hand. Place right hand under the round near the shoulder pad.
 - (4) Lift the Javelin in a single, smooth motion, and position the shoulder pad onto the right shoulder.
 - (5) Kneel in the most comfortable position, with one knee or both knees on the ground.
 - (6) Hold the command launch unit (CLU) by the right handgrip, and adjust body until comfortable with the Javelin.
 - (7) Check the overhead flight path between the target and the firing position. To do this, sight along the top of the round. As long as all obstacles are above the line of the round, the missile has a clear path when it is launched.
 - (8) After assuming the kneeling position, ensure that the forward end cap is on the ground, in front of and slightly to the right of right leg or foot. This ensures that it is out of the backblast area and that you can easily set the front end of the round on the end cap when you remove the Javelin from your shoulder.
 - (9) Press your eye firmly against the eyecup.
 - b. Sitting position.
 - (1) Sit or kneel on the left side of the Javelin at the forward end, facing the direction of fire.
 - (2) Check the backblast area, and ensure no one is located in the backblast area.
 - (3) Grasp the left handgrip with left hand. Place right hand under the round near the shoulder pad.
 - (4) Lift the Javelin in a single, smooth motion, and position the shoulder pad on the right shoulder.
 - (5) Get into a comfortable sitting position. Choose the one that is most comfortable:
 - (a) Sit with legs crossed.
 - (b) Sit with legs parallel and bent at the knees at about 90 degrees.
 - (6) Hold the CLU by the right handgrip, and adjust your body until comfortable with the Javelin.
 - (7) Check the overhead flight path between the target and the firing position. To do this, sight along the top of the round. As long as all obstacles are above the line of the round, the missile has a clear path when it is launched.
 - (8) Ensure that the forward end cap is on the ground, in front of and slightly to the right of right leg or foot. This keeps it out of the backblast area and within easy reach, so you can easily set the front end of the round on the end cap, when the Javelin is removed from the shoulder.
 - (9) Press your eye firmly against the eyecup.
 - c. Standing supported position.
 - (1) Kneel on the left side of the Javelin at the forward end.
 - (2) Check the backblast area, and ensure that no one is located in the backblast area.
 - (3) Grasp the left handgrip with your left hand. Place your right hand under the round near the shoulder pad.
 - (4) Lift the Javelin in a single, smooth motion, and position the shoulder pad on your right shoulder.

Performance Steps

- (5) Carefully rise to a standing position. Stand with your legs spread apart at a comfortable distance.
- (6) Hold the CLU by the right handgrip, and place your elbows on the edge or rim of the supported positions.
- (7) Check the overhead flight path between the target and your firing position. To do this, sight along the top of the round. As long as all obstacles are above the line of the round, the missile has a clear path when it is launched.
- (8) Press your eye firmly against the eyecup.
- d. Prone position.
 - (1) Set the round on the ground with the flat sides of the end caps face down. The round interface connector and latch assembly should be face up.
 - (2) Ensure that the round points toward the target area.
 - (3) Place the carry bag (with CLU) on the left side of the round by the forward end.
 - (4) Lay on your left side along the left side of the round next to the carry bag. Maintain a low profile to limit observation of your movements.
 - (5) Remove the CLU from the carry bag.
 - (6) Turn the power switch to the night position.
 - (7) Connect the CLU to the round.
 - (8) Remove the forward end cap.

CAUTION: With the forward end cap removed, the seeker is exposed. Use extreme caution when tipping the Javelin forward to ensure that no foreign material (rocks, mud) comes in contact with the seeker.

- (9) Place the forward end cap directly under the open end of the Javelin.
- (10) Open the night vision sight (NVS) and daysight lens covers.
- (11) Check the backblast area. Ensure that no personnel are located in the primary danger zone or caution areas.
- (12) Position your body so it is parallel with the Javelin, with your left hand tightly on the left handgrip.

NOTE: Placing your left hand on left handgrip helps to guide or keep the Javelin in control. Your right shoulder should be just behind the shoulder pad to balance the weight.

- (13) Tilt the Javelin and your body to the left side, at the same time, reach out with your right hand to secure the forward end cap. (The forward end cap supports the Javelin's weight in the prone position.)
- (14) Grasp the forward end cap, hold it with the inside of the forward end cap facing toward the CLU, with the outside of the end cap facing toward the ground, and with the flat side of the forward end cap facing up.
 - (a) Place the flat side of the forward end cap against the round shoulder pad.
 - (b) Slide the forward end cap forward, until the forward end cap locking ring contacts the shock absorber on the battery compartment. This wedges the forward end cap into position.
- (15) Slowly lower the Javelin until it rests on the forward end cap. Slide your body forward so that your right shoulder is against the forward end cap.
 - (a) Ensure that you can reach the right handgrip switches and operate them easily.
 - (b) Ensure that the Javelin is supported by the forward end cap and is not resting on your shoulder.
 - (c) Pull the Javelin tightly into your body until the forward end cap fits against the right shoulder. Press your right eye into the eyecup.
- (16) Place your body at a 30 degree angle to the length of the round (intended direction of fire). This prevents your legs from extending into the backblast area.

WARNING:

- 1. Injury may occur if body is extended into backblast area. If injury should occur, seek medical help immediately.
- 2. Have an assistant gunner ensure that the gunner's body remains clear of the backblast area.
- 3. DO NOT balance the round on your shoulder while in the prone position.
- 4. DO: Balance the system on the ground using the forward end cap.

Performance Steps

2. Acquire a target.
 - a. Use the CLU field of view (FOV) to detect, classify, and recognize a target, then to determine its engageability.
 - b. Focus the CLU FOV using the following FOV progression sequence:
 - (1) Day FOV. Day FOV presents a full color visible light image with a 4x magnification of the target. Day FOV is used normally during daylight hours to conduct surveillance and target detection.
 - (2) NVS:
 - (a) Wide Field of View (WFOV). Presents a black and green infrared image with a 4x magnification of the target scene. WFOV is used for surveillance and target detection due to its broader area of coverage.
 - (b) Narrow Field of View (NFOV). Presents a black and green infrared image with a 9x magnification of the target image. Due to its limited area of coverage, NFOV is used for classification and recognition, not surveillance and target detection.
 - (c) Seeker FOV. Seeker FOV presents a black and green image with a 9x magnification of the target scene to the gunner. Seeker FOV is used only to lock the seeker onto the target.
 - c. Detect the target. Look and listen for—
 - (1) Sounds. Sounds can alert a gunner to the direction or general location of the enemy. They may not pinpoint the enemy's exact location, but if a sound alerts a gunner, he is more likely to spot the enemy. Listen for such things as limbs breaking, men coughing, and equipment or vehicle sounds.
 - (2) Dust or vehicle exhaust. Moving vehicles often raise dust. In addition, vehicles create exhaust smoke, which rises. Stay alert for dust and vehicle smoke, because you can see these at long ranges.
 - (3) Positions. Look for enemy positions in obvious places, such as road junctions, hilltops, and lone buildings. Also, observe areas with cover and concealment, such as woods or draws.
 - (4) Outlines or shadows. Look for unnatural shapes. Man-made objects have well-defined, regular edges. Watch for the outlines or shadows of enemy Soldiers, equipment, vehicles, or gun placements. Observe shaded areas; the enemy may use the shadows of trees or buildings to hide himself and his equipment.
 - (5) Shine or glare. In darkness, look for light sources, such as burning cigarettes, headlights, or flashlights. In daylight, look for reflected light on headlights, mess gear, or watch crystals.
 - d. Scan for targets.
 - (1) Scan the entire sector of fire or area of surveillance using WFOV.
 - (2) Scan in a consistent pattern, slowly and evenly.
 - (3) Pay special attention to those positions where you think a target will appear.
 - (4) Identify the location of objects, such as trees, roads, buildings, and previously killed targets that have distinct infrared signatures. This will help you quickly locate targets moving in the sector of fire or area of surveillance.
 - (5) If you have trouble finding a target through the NVS, look over the top of the CLU, rather than through it, if visibility conditions permit.
 - (6) Use the following scanning techniques:
 - (a) Rapid scan. Use this to quickly detect obvious signs of enemy activity.
 - (b) Slow scan. If you don't identify any targets in your scan, conduct a more deliberate scan of the terrain.
 - (c) Detailed search. If you don't find any targets using either the rapid or slow scan techniques, make a careful, detailed search of the target area using the NFOV.
 - e. Detect moving targets. Moving targets are easier to detect than stationary ones because the eye is drawn toward the movement. If you suspect that you have spotted a target, stop scanning and watch the target.

Performance Steps

- (1) An approaching target appears to become larger, while a retreating target appears to become smaller.
 - (2) A moving target often produces a cloud of dust or exhaust smoke.
 - (3) A target moving down a road appears to move smoothly, while those moving across open terrain appear to flicker or to move up and down.
 - (4) Watch for smoke or heat rising from the engine area and exhaust. Just before it begins to move a stationary vehicle releases a cloud of diesel fuel burn-off.
- f. Detect stationary targets. A stationary target is more difficult to detect than a moving target, because its infrared image becomes distorted and incomplete as the target cools. Detect stationary targets by checking for the following:
- (1) Hot stationary targets.
 - (a) Suspension system.
 - (b) Track area. This presents a distinct infrared image due to friction. If viewed from the front, the tracks normally show. Two infrared signatures appear on either side of and below a larger dark area (the hull). If viewed from the flank, the tracks and road wheels show, because the infrared signature appears beneath a larger dark area (the hull).
 - (2) Engine compartment.
 - (a) A stationary vehicle's engine compartment gives off a hot infrared signature for several hours after the vehicle stops. The engine takes longer to cool than the rest of the body.
 - (b) A stationary vehicle must start its engine periodically to keep its battery charged, which creates a better infrared image.
 - (c) Gun tube. Another area to look for heat is at the end of the gun tube. If the gun has been fired recently, the end of the tube will appear hotter than the surrounding area.
 - (d) Back lighting. The infrared energy being transmitted from the infrared (IR) source and being reflected off another object may create a silhouette of the IR source.
 - (3) Cold stationary targets.
 - (a) Look for an infrared signature that resembles a silhouette of a wheeled or tracked vehicle.
 - (b) When viewed in the WFOV or NFOV, this silhouette may appear as a dark green or black image against a lighter green background.
- g. Classify the target as either a wheeled or tracked vehicle by checking the following:
- (1) Suspension system.
 - (2) Engine compartment.
 - (3) Gun tube.
- h. Recognize the target as a tank or armored vehicle using the following target recognition features:

SIGNATURE	TANK	APC
Engine compartment	located in rear	located in front
Exhaust ports	located in rear	located in front or side
Main gun	long and thick	short and thin
Turret	yes-and large	none
Size and shape	large and sloping	usually rectangular
Cupola	new tanks-no old tanks-yes	yes-usually small

3. Determine if the target is engageable.
4. Select target engagement technique.
 - a. Activate the seeker.
 - b. Lift the seeker trigger guard on the left handgrip.
 - c. Squeeze the seeker trigger and wait for the seeker (SEEK) and (MISSILE NOT READY) indicators to light. (The NFOV indicator remains lit.)

Performance Steps

- d. Release the seeker trigger within 4 seconds after the (SEEK) and (MISSILE NOT READY) indicators light.
 - e. Wait 10 to 15 seconds after the seeker activates, the NFOV and MISSILE NOT READY indicators go out, and the TOP indicator comes on. The seeker FOV with flashing gates will appear on the CLU display.
5. Select attack mode and change (If necessary).
- a. Top attack is the default mode for the missile.
 - b. Select direct attack (if it is the desired attack mode) using the attack select (ATTK SEL) switch. You must select the direct attack mode before you can lock the seeker onto a target.
 - c. You can switch between top attack and direct attack modes any time before seeker lock-on by pressing the ATTK SEL switch. The appropriate mode indicator (seek, top) or (seek, direction [dir]) lights up on the display.
 - d. Adjust the track gates. To do this, use the gate adjust/contrast and brightness (GATE ADJ/CTRS & BRT switch.
 - (1) With the right thumb, press the GATE ADJ/CTRS & BRT switch up, down, left, or right. The track gates open or close around the center of the seeker FOV.
 - (a) Pressing the switch down decreases the height of the track gates.
 - (b) Pressing the switch up increases the height of the track gates.
 - (c) Pressing the switch left decreases the width of the track gates.
 - (d) Pressing the switch right increases the width of the track gates.
 - e. Position the track gates around the target.
 - (1) Position the target in the center of the seeker FOV.
 - (2) Adjust the track gates to position the left track gate on the left edge of the target and the right track on the right edge of the target.
 - (3) If the target is too large to position the track gates around it, adjust the track gates around the outside edges of the target's center of mass.
6. Lock on target.
- a. Squeeze and hold the seeker trigger. Flashing crosshairs appear to indicate lock on is in progress. Keep track gates and crosshairs on the target while the seeker is locking on. Two things happen to show lock on has occurred, the track gates and crosshairs stop flashing.
 - b. Break lock on if the wrong target was chosen or lock on quality is poor (step C below) by releasing the seeker trigger. This will allow for a new lock on. A break lock situation can occur under one of the following situations:
 - (1) Seeker trigger release. If the gunner wishes to break seeker lock, he releases his hold on the seeker trigger. The seeker crosshairs disappear and the track gates resume flashing. If the gunner releases the trigger by accident then break lock will occur.
 - (2) Target reaches cover. Break lock can also occur when the target disappears from the seeker FOV and goes behind an object or a terrain feature.
 - (a) If the target does not reappear, then the gunner must reacquire a new target before expiration of the battery coolant unit (BCU), or terminate engagement.
 - (b) If the target reappears within 5 seconds, then the seeker may relock on the target.
 - (3) Failure to maintain tracking rate.
 - (a) If the gunner allows the crosshairs to move off the target (outside the track gates), the crosshairs start to flash. The gunner must move the crosshairs back on the target (inside the track gates).
 - (b) If the gunner does not maintain his tracking rate and allows the crosshairs to move even further off the target (outside the track gates), both the crosshairs and track gates start to flash and break lock occurs.

Performance Steps

- (4) Infrared (IR) clutter. IR clutter is defined as a scene where the surrounding area or background radiates as much or more heat than the target itself. This results in the target being washed out or undetectable with an IR system. The gunner may have to relock on the target with smaller track gates or wait for the target to leave the IR clutter area before he can lock on the target. The seeker may also break-lock due to the lack of temperature variations or if the background is hotter than the target.
7. Launch the missile
 - a. Before you try to launch the missile, ensure the track gates are not flashing. The missile will not launch if they are.
 - b. Center the crosshairs on the target, then squeeze and hold the fire trigger until the missile launches.
 - c. Do not release the seeker trigger until after the missile launches. Otherwise, the seeker will break lock on. The seeker may not always lock on to a target. If the gunner squeezes and holds the seeker trigger, the crosshairs display, and the track gates and crosshairs flash, then the seeker has not locked on.
 - d. After the missile launches and the CLU display reverts back to the last FOV, release the fire and seeker triggers.
8. Assess battle damage using one of the following techniques:
 - a. Remove the empty launch tube assembly, relocate to a new firing position, and reacquire the fired-upon target.
 - b. Reload and observe the fired-upon target through the CLU.
 - c. Continue observing the target through the CLU until the missile hits the target.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task conditions statement.

Brief Soldier: Brief the Soldier on range safety IAW installation SOP. Tell the Soldier to assume a firing position. Tell the Soldier you are evaluating his ability to place effective fire on targets using the Javelin.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Assume a Javelin firing position.	_____	_____
a. Kneeling position.		
b. Sitting position.		
c. Standing supported.		
d. Prone.		
2. Acquire a target.	_____	_____
a. Detect.		
b. Classify.		
c. Recognize.		
3. Determine if the target is engageable.	_____	_____
4. Select a target engagement technique.	_____	_____
5. Select an attack mode.	_____	_____
6. Lock on the target.	_____	_____
7. Launch the missile.	_____	_____
8. Perform a battle damage assessment.	_____	_____

STP 31-18B34-SM-TG

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

TM 9-1425-688-12

React to Javelin Malfunction Indicators
331-201-2236

Conditions: Given a Javelin with a malfunction indication.

Standards: Restore the weapon to a functioning mode. Eliminate interruptions in functioning caused by faulty action of the Javelin. Report to the supervisor any deficiencies not correctable at operator level.

Performance Steps

The five malfunction indications are: missile overhear, command launch unit (CLU) built-in-test (BIT) failure, missile BIT failure, misfire, and hangfire. Immediate action procedures are:

1. Missile overhear.
 - a. Observe that the MISSILE NOT READY indicator is on (steady).
 - b. Turn off the CLU.
 - c. Ground the Javelin.
 - d. Keep the Javelin pointed in the direction of the target.
 - e. Remove the CLU.
 - f. Obtain the replacement round and connect to the CLU.
 - g. Continue the mission.
2. CLU BIT failure.
 - a. Indicator is red (on).
 - (1) If engaging target, complete engagement.
 - (2) If engagement is not in progress, recycle power and continue operation.
 - (3) If indicator remains on, replace CLU (steps 1b-1g).
 - b. Indicator is amber (flashing).
 - (1) Try to launch missile.
 - c. Indicator is amber (solid)
 - (1) Replace the round (steps 1b-1g).
3. Missile BIT failure. Replace the round (steps 1b-1g).
4. Misfire.
 - a. Release the fire and seeker triggers. Keep the Javelin pointed in the direction of the enemy.
 - b. Try again to launch the missile. If the missile fails to launch, go to 4c.
 - c. Set the CLU power switch to OFF.
 - d. Set the Javelin on the ground, pointed in the direction of the enemy target, with the CLU hand grips facing up. Keep the backblast area clear.
 - e. Press the latch release and disconnect the CLU from the round. If the missile fails to launch a second time, go to 4i.
 - f. Reconnect the CLU to the round.
 - g. Attempt to reengage the target
 - h. If the missile still fails to launch, repeat steps 4c through 4e.
 - i. Move the round 25 meters from the firing position.
 - j. Notify the squad leader.
 - k. Obtain the replacement round and connect the CLU.
 - l. Continue the mission.
5. Hangfire.
 - a. Release the fire and seeker triggers. Keep the Javelin pointed in the direction of the enemy target for 60 seconds.
 - b. Set the CLU power switch to OFF.
 - c. Set the Javelin on the ground, pointed in the direction of the enemy target, with the CLU hand grips facing up. Keep the backblast area clear.
 - d. Press the latch release and disconnect the CLU from the round. Move the round 25 meters from the firing position.

Performance Steps

- e. Notify the squad leader.
- f. Obtain the replacement round, and connect the CLU.
- g. Continue the mission.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task conditions statement.

Brief Soldier: Tell the Soldier to perform immediate action procedures for a Javelin.

Performance Measures

GO **NO GO**

- 1. Apply immediate action procedures for missile overheat.
- 2. Apply immediate action procedures for CLU BIT failure.
- 3. Apply immediate action procedures for Missile BIT failure.
- 4. Apply immediate action for misfire.
- 5. Apply immediate action for hangfire.

____ ____
____ ____
____ ____
____ ____
____ ____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

TM 9-1425-688-12

Restore a Javelin to Carrying Configuration
331-201-2237

Conditions: Given a Javelin in the ready-to-fire configuration, but that has not been fired; a carry bag; an all-purpose lightweight individual carrying equipment (ALICE) pack; an individual weapon; and a carry configuration designated by the squad or fire team leader.

Standards: Restore the Javelin and the component parts to a carry configuration without damage to equipment.

Performance Steps

1. Remove the Javelin from your shoulder, and place it so that the flat area of the aft end cap is face down and the open end of the round rests on the forward end cap.
NOTE: Prior to turning the command launch unit (CLU) power switch OFF, leave the power switch in the DAY position for at least one second to allow the flipper mirror to move to the day position.
2. Turn the CLU power switch to the OFF position.
3. Close the CLU lens covers.
4. Replace the forward end cap.
 - a. Grasp the hand grip with the right hand, and lift the forward end of the round.
 - b. Check to ensure that the forward end cap latch is in the open position.
 - c. Align the forward end cap latch handle with the battery coolant unit (BCU) pylon.
 - d. Slide the forward end cap onto the round and turn the latch clockwise to engage the locks.
 - e. Reinstall the locking pin into the hole in the forward end cap.
5. Press the round latch release, and remove the CLU from the round.
6. Reinstall the protective covers on the CLU and round interface connectors.
7. If the seeker was activated, replace the BCU.
8. Place the CLU in the carry bag with the handgrips up and the eyecup toward the bag of the carry bag.
9. Assume either the short-distance carry or the long-distance carry configuration.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task conditions statement.

Brief Soldier: Tell the Soldier to restore the Javelin to a carrying configuration.

Performance Measures	GO	NO GO
1. Remove the Javelin from shoulder.	_____	_____
2. Turn the CLU power switch to the OFF position.	_____	_____
3. Close the CLU lens covers.	_____	_____
4. Replace the forward end cap.	_____	_____
5. Press the round latch release and remove the CLU from the round.	_____	_____
6. Reinstall the protective covers on the CLU and round interface connectors.	_____	_____
7. Replace the BCU, if necessary.	_____	_____

Performance Measures

GO

NO GO

8. Replace the CLU in the carry bag.

9. Assume either the short-distance carry or the long-distance carry configuration.

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 9-1425-688-12

Construct a Fighting Position for a Javelin**331-201-2238**

Conditions: Given a Javelin, a sector of fire, a location for the fighting position, an entrenching tool, overhead cover material, individual equipment, and a requirement to construct the position.

Standards: Construct a fighting position that—

1. Covers the assigned sectors of fire.
2. Has enough room to accommodate firing and the preparation of another Javelin round.
3. Provides cover from small arms fire by means of natural or man-made parapets.
4. Provides concealment that prevents easy detection by a Soldier using binoculars 1,000 meters to the front of the position.

Performance Steps

1. Construct the position.

NOTE: After receiving a sector of fire and a firing location from the squad leader, position the weapon to cover the sector. Clear fields of fire, as necessary.

- a. Top View.

- (1) The standing area is about two M16A2 rifles from side-to-side and about three Kevlar helmets, front-to-rear.
- (2) The elbow shelf is about one-half of a Kevlar helmet wide at the sides and at the front. It is approximately two Kevlar helmets long from the timbers to the front edge.
- (3) The primary backblast slope is about two Kevlar helmets wide, horizontally.
- (4) The secondary backblast slope is about one Kevlar helmet wide, horizontally.
- (5) The distance between the secondary backblast slope and the backblast berm is equal to one Kevlar helmet.
- (6) Slope the grenade sump forward at a 45-degree angle. Make it one entrenching tool deep and long, and one blade wide. Slope the floor of the main trench gently from each end to the center and from rear to front.

- b. Side View.

- (1) The elbow shelf is about one-half of a Kevlar helmet deep from ground level.
- (2) The primary backblast slope goes from one and a half Kevlar helmets to one Kevlar helmet below ground level.
- (3) The secondary backblast slope goes from one Kevlar helmet below ground level to ground level.
- (4) The standing area is about three Kevlar helmets from front to rear.
- (5) The floor is about armpit deep from the elbow shelf. It is about as deep from the primary backblast slope as the length from the butt to the front sight of an M16A2 rifle.
- (6) The primary backblast slope is about two Kevlar helmets long, sloping.
- (7) The secondary backblast is about one and a half Kevlar helmets long, sloping.
- (8) The distance from the secondary backblast slope to the backblast berm is one Kevlar helmet.
- (9) The height of the backblast berm is about equal to the length from the butt to the midpoint on the stack of an M16A2 rifle.

- c. Front View.

- (1) The standing area is about two M16A2 rifles, side-to-side.
- (2) The firing port is about one Kevlar helmet high from ground level.
- (3) The height from the elbow shelf to the fighting position ceiling support timber is about one and a half Kevlar helmets.
- (4) The elbow shelf is approximately one-half of a Kevlar helmet below ground level and is about two Kevlar helmets long, side-to-side, on either side of the fighting position.
- (5) The front parapet is one M16A2 long and wide, and two helmets high. Make the flank parapets one M16A2 wide, two helmets high, and long enough to give good flank protection.

Performance Steps

2. Construct overhead cover.
 - a. Mark the position of the overhead cover, making a rectangle one M16A2 wide by two M16A2s long at each end of the trench.
 - b. Dig out the soil within the marked area (save any sod) to about 12 inches. The area dug must extend at least 18 inches beyond each side of the trench.
 - c. Place 4 to 6 inch thick logs or other supporting material into each hole.
 - d. Fill the remainder of the hole with dirt until it is about ground level. Use sod to cover the dirt.
 - e. Enter the trench and dig a cave-like hole under the logs or supporting material.
3. Camouflage the position.
 - a. Use available materials (grass, clumps, foliage) to make your position blend into surroundings.
 - b. Check the camouflage to see if you can spot the position easily.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task conditions statement.

Brief Soldier: Tell the Soldier that he must construct a fighting position for a Javelin.

Performance Measures

GO **NO GO**

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Construct a position. <ol style="list-style-type: none"> a. Prepare a position two M16s long, armpit deep, and three Kevlar helmets wide. b. Construct the front parapet one M16 long, one M16 wide, and two Kevlar helmets high. c. Prepare elbow shelf one-half Kevlar helmet wide and deep, and two Kevlar helmets long. d. Construct primary backblast slope two Kevlar helmets long and wide, and one to one and one half Kevlar helmets below ground level. e. Construct secondary backblast slope one Kevlar helmet wide and below ground level and one and one half Kevlar helmets long. f. Prepare backblast berm equal to length of an M16 from the butt to midpoint on the stock. 2. Construct overhead cover. <ol style="list-style-type: none"> a. Mark a rectangle one M16 wide by two M16s long. b. Dig out rectangle. c. Place supporting material into hole. d. Fill hole. e. Dig under supporting material. 3. Ensure position covers assigned sectors of fire. | <div style="margin-bottom: 10px;"> <div style="border-top: 1px solid black; width: 50px; margin: 0 auto;"></div> <div style="border-top: 1px solid black; width: 50px; margin: 0 auto;"></div> </div> <div style="margin-bottom: 10px;"> <div style="border-top: 1px solid black; width: 50px; margin: 0 auto;"></div> <div style="border-top: 1px solid black; width: 50px; margin: 0 auto;"></div> </div> <div> <div style="border-top: 1px solid black; width: 50px; margin: 0 auto;"></div> <div style="border-top: 1px solid black; width: 50px; margin: 0 auto;"></div> </div> |
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Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

TM 9-1425-688-12

Engage Targets With an M72A2/A3 Light Antitank Weapon

331-201-2241

Conditions: In a combat environment, given an M72A2 light antitank weapon (LAW) prepared for firing, a clear backblast area, an engage able target (threat position or vehicle), and a firing position that offers cover and concealment for the gunner.

Standards: Round impacts on target.

Performance Steps

1. Identify the target speed and angle.
 - a. Stationary: Vehicles are not moving or are moving directly away or directly toward the gunner.
 - b. Slow Moving: Vehicles are moving laterally 5 miles per hour (mph) (8 kilometers per hour [kph]) or less.
 - c. Fast Moving: Vehicles moving laterally greater than 5 mph (8 kph).
2. Estimate range.
 - a. Estimate must be within 50 meters of actual range.
3. Sight on the target.
 - a. Stationary target: Estimated range mark on the front sight vertical range line is placed in the center of the target mass.
 - b. Slow target: Estimated range mark on the front sight vertical range line is in the front of the target. The lead cross is on the center of target mass.
 - c. Fast target: Estimated range mark on the front sight vertical range line is in the front of the target. The lead cross is on the front edge of the target.
4. Fire the M72A2 LAW.

Evaluation Preparation: Setup: At the test site provide all materials and equipment according to the task conditions statement.

Brief Soldier: Tell the Soldier to prepare the LAW for firing ensure the backblast area is clear select a firing position that provides cover and concealment.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Identify the target speed and angle.	_____	_____
2. Estimate the range.	_____	_____
3. Sight on the target.	_____	_____
4. Fire the M72A2 LAW.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any steps is failed. If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References Required

Related
FM 3-23.25

Perform Misfire Procedures on an M72A2/A3 Light Antitank Weapon 331-201-2242

Conditions: In a combat environment, given a target within firing range, an M72A2 light antitank weapon (LAW), prepared for firing, and a malfunction of the firing system.

Standards: Applied misfire procedures and either the weapon fired or failed to fire. If the weapon failed to fire after the second attempt, the weapon was placed in a SAFE configuration and disposed of in accordance with unit standing operating procedure (SOP).

Performance Steps

1. Keep the weapon oriented on target.
2. Resqueeze the trigger bar.
3. Return the arming handle to SAFE.
4. Remove the weapon from shoulder, partially collapse it, then reextend it (keeping hands clear of the front and rear tube openings).
5. Replace the weapon on shoulder and check backblast area.
6. Arm, aim, and attempt to fire.
7. Place the arming handle on SAFE, collapse tube, and lay it aside.
8. Dispose of or destroy the faulty weapon in accordance with standard operating procedures.

NOTE: In the event the weapon (M72A2) has failed to fire, and attempts to refire have failed, engage the target with another LAW if the target is still present.

Evaluation Preparation: Setup: At the test site provide all materials and equipment according to the task conditions statement.

Brief Soldier: Tell the Soldier to attempt to fire the weapon the weapon fail to fire after the second misfire the weapon is placed on SAFE configuration and disposed of in accordance with unit SOP.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Keep the weapon oriented on target.	—	—
2. Resqueeze the trigger bar.	—	—
3. Return the arming handle to SAFE.	—	—
4. Remove the weapon from shoulder, partially collapse it, and then reextend it .	—	—
5. Replace the weapon on shoulder and check backblast area.	—	—
6. Arm, aim, and attempt to fire.	—	—
7. Place the arming handle on SAFE, collapse tube, and lay it aside.	—	—
8. Dispose of or destroy the faulty weapon in accordance with standard operating procedure.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any steps, show what was done wrong and how to do it correctly.

References
Required

Related
FM 3-23.25

Prepare an M72A2/A3 Light Antitank Weapon for Firing **331-201-2243**

Conditions: Given an M72A2/A3 light antitank weapon (LAW), in carrying configuration, and a combat environment.

Standards: Extend the sights of the M72A2/A3 LAW into proper position, arm handle raised to ARM position, and ensure the weapon is in the proper configuration for firing.

Performance Steps

1. Remove the pull pin on the rear of the weapon and rotate the rear cover downward, allowing the front cover and sling assembly to fall free.

NOTE: DO NOT discard the sling assembly until the rocket is fired.

2. Extend the M72A2/A3 LAW by grasping the rear sight cover, with the firing hand, and the tube of the weapon between the arming handle and the detect button, with the nonfiring hand. Sharply pull the launcher to the rear until locked into position. Attempt to collapse the launcher by reversing the motion of your hands, to verify that the weapon is locked into position.

CAUTION: Throughout the preparation phase, ensure backblast area is kept clear.

Evaluation Preparation: Setup: At the test site provide all materials and equipment according to the task conditions statement.

Brief Soldier: Tell the Soldier to prepare the weapon for firing ensure that all procedures are in accordance with (IAW) the standards.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Remove the pull pin on the rear of the weapon, and rotate the rear cover downward.	_____	_____
2. Extend the M72A2/A3 LAW by grasping the rear sight cover with the firing hand and the tube of the weapon.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

FM 3-23.25

Restore an M72A2/A3 Light Antitank Weapon to Carrying Configuration

331-201-2244

Conditions: In a combat environment, given an M72A2 light antitank weapon (LAW) that has been prepared for firing, and the requirement to restore it to a safe carrying configuration.

Standards: Return the M72A2 LAW to its original configuration with safety and sights in place and ready for carrying.

Performance Steps

1. Return the trigger safety handle to the safe position, and then remove the launcher from shoulder.
 2. Grasp the launcher by the rear sight housing with one hand, and squeeze the detect boot with the tip of fingers of the other hand.
 3. Collapse the launcher slightly.
 4. Move hand from the detect boot to the front sight.
 5. Hold the front sight down, and collapse the launcher until the inner tube covers the tip of the front sight.
 6. Fold the rear sight down, and guide it under the housing.
 7. Compress the launcher until travel is stopped by the lip on the front sight.
 8. Press the front sight lip with the thumb, and slowly compress the launcher over the lip edge.
 9. Remove the thumb from the front sight, and grasp the housing.
 10. Collapse the launcher fully.
 11. Close the rear cover, ensuring that the round lock fits through the slot in the cover.
 12. Replace the cover pull pin by inserting the cover pull pin from right to left with the short end through the cover closing lug and the long end through the round lock, which protrudes through the rear cover.
 13. Replace the front cover, and hold in place.
 14. Replace the sling assembly by grasping both web straps of the sling assembly next to the hook springs and placing the thumb on the rear cover above the hinge. Exert downward pressure with the thumb while pulling up on the sling assembly until the hooks snap into position over the cover hinge.
- NOTE:** DO NOT use the rear cover as a lever to assist in attaching the sling assembly. This will damage the cover hinge.

NOTE: Throughout entire period of reassemble, keep weapon pointed downrange to a safe area and keep backblast area clear.

Evaluation Preparation: Setup: At the test site, provide all materials and equipment according to the task conditions statement.

Brief Soldier: Tell the Soldier to place the M72A2 LAW back to the original configuration with sights in place and ready for carrying.

	<u>GO</u>	<u>NO GO</u>
Performance Measures		
1. Return the trigger safety handle to the safe position, and then remove the launcher from shoulder.	—	—
2. Grasp the launcher by the rear sight housing.	—	—
3. Collapse the launcher slightly.	—	—
4. Move hand from the detent boot to the front sight.	—	—
5. Hold the front sight down, and collapse the launcher.	—	—
6. Fold the rear sight down, and guide it under the housing.	—	—
7. Compress the launcher until the lip on the front sight stops travel.	—	—
8. Press the front sight lip with the thumb, and slowly compress the launcher over the lip edge.	—	—
9. Remove the thumb from the front sight, and grasp the housing.	—	—
10. Collapse the launcher fully.	—	—
11. Close the rear cover, ensuring that the round lock fits through the slot in the cover.	—	—
12. Replace the cover pull pin.	—	—
13. Replace the sling assembly.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any steps, show what was done wrong and how to do it correctly.

**References
Required**

Related
FM 3-23.25

Subject Area 16: MACHINE GUNS

Correct Malfunctions of a Caliber .50 M2 Machine Gun**071-022-0005**

Conditions: Given a loaded caliber .50 M2 machine gun, mounted on a tripod or cupola, a sector of fire, an assistant gunner, linked caliber .50 ammunition, a ruptured cartridge extractor, a cleaning rod, cleaner lubricant preservative (CLP), lubricating oil arctic weather (LAW), cleaning swabs, and a headspace and timing gauge. The caliber .50 machine gun has been firing and one of the following situations has developed: The weapon has failed to fire; the weapon continues to fire after the trigger is released (uncontrolled fire); or the weapon is firing sluggishly.

Standards: Within 10 seconds after a caliber .50 machine gun fails to fire, take immediate action to return the weapon to service. DO NOT identify the cause of the malfunction. If immediate action is unsuccessful, perform remedial action. Identify the cause of the malfunction. Take immediate action to secure a runaway caliber .50 machine gun; then take remedial action to eliminate the malfunction. Take corrective action for a caliber .50 machine gun that is firing sluggishly.

Performance Steps

1. Take immediate action to correct a failure to fire.
 - a. On a cool weapon, that is, one that has fired fewer than 150 rounds in 2 minutes-
 - (1) Hold the weapon on target.
 - (2) Wait 5 seconds in case the weapon has a hangfire.
 - (3) Pull the bolt to the rear. Return the retracting slide handle to its forward position. If the bolt locks to the rear, depress the bolt latch to return the bolt to the forward position.
 - (4) Try to fire. If the weapon fires, you have corrected the stoppage.
 - (5) If the weapon fails to fire, wait 5 seconds, pull the bolt to the rear, and lock it in the rearward position (engage with bolt latch). Return the retracting slide handle to its forward position.
 - (6) Proceed to Step 2, remedial action.
 - b. On a hot weapon, that is, one that has fired 150 or more rounds in 2 minutes-
 - (1) Hold the weapon on target.
 - (2) Wait 5 seconds in case there is a hangfire.
 - (3) Within the next 5 seconds, pull the bolt to the rear, return the retracting slide handle to its forward position, and try to fire. If the weapon fires, you have corrected the stoppage.
 - (4) If the weapon fails to fire, or if you were unable to retract the bolt during Step 1b(3), then you must keep the cover closed and wait 15 minutes to allow the weapon to cool.
 - (5) Go to Step 2.

DANGER: Never open the cover assembly on a hot weapon. The weapon could cook off, which could damage the weapon and, more importantly, could kill or injure personnel. Apply immediate action to a hot weapon within 10 seconds. If you are unable to either fire or remove the round within 10 seconds, then you must wait another 15 minutes before you can do anything else to the weapon.

2. Take remedial action.
 - a. Open the cover assembly and check for faulty ammunition or an obstruction in the barrel assembly and chamber.
 - b. If a cartridge is in the T-slot of the bolt, and if it does not fall out, then hold the bolt to the rear, raise the extractor, and use a screwdriver to push the cartridge out the bottom of the receiver.
 - c. If a ruptured (separated) cartridge case is in the T-slot, remove it with a cleaning rod or ruptured cartridge extractor.
 - (1) When using the ruptured extractor, raise the cover. Pull and lock the bolt to the rear. Place the extractor in the T-slot the same way you would with a cartridge. Use the gun's extractor assembly ejector to hold the extractor in line with the bore. When the extractor is aligned with the bore, let the bolt go forward into the ruptured case. The shoulders will

Performance Steps

- spring out in front of the case. Pull the bolt to the rear and remove the ruptured case and extractor.
- (2) When using a cleaning rod, raise the cover. Pull and lock the bolt to the rear. Insert the cleaning rod in the front end of the barrel. Gently push the ruptured cartridge from the chamber.
 - d. Reload and try to fire the weapon. If the weapon does not fire, continue remedial action.
 - e. Disassemble the weapon and inspect for dirt, obstructions, and defective parts.
 - f. Clean the weapon, remove obstructions, and replace defective parts. Lubricate and assemble the weapon.
 - g. Set or adjust headspace and timing.
 - h. Replace faulty ammunition.
 - i. If the weapon still fails to fire, notify your supervisor.
3. Take immediate action to stop uncontrolled automatic fire (runaway gun).
 - a. Perform one of three actions:
 - (1) Hold the weapon on target until it stops firing.
 - (2) Have the assistant gunner twist the belt, causing the gun to jam.
 - (3) Allow the weapon to fire remaining ammunition.
 - b. If you have fired all your ammunition, check to ensure the weapon is clear, and go to Step 3c. If you have not fired all your ammunition, and the weapon is hot (it has fired more than 150 rounds in less than 2 minutes), keep the cover assembly closed and wait 15 minutes, then proceed to Step 3c.
 - c. Disassemble the weapon and inspect for defective parts.
 - d. Clean the weapon, remove obstructions, replace defective parts, lubricate, and assemble the weapon.
 - e. Check headspace and timing, and adjust them if necessary.
 - f. If the weapon still fails to fire properly, notify your supervisor.
 4. Correct sluggish operation.
 - a. Clear the weapon.
 - b. Disassemble, clean, and lubricate the weapon.
 - c. Assemble the weapon.
 - d. Set headspace and timing.

Evaluation Preparation: Setup: Evaluate this task at a test site rather than on a live-fire range. Provide the materials and equipment listed in the task conditions statement. Give the Soldier caliber .50 linked dummy rounds instead of live rounds. Insert an expended round in the belt to cause a stoppage.

Brief Soldier: Tell the Soldier to assume a firing position behind the caliber .50 machine gun and to apply any required immediate action. Tell the Soldier that the test does not require him or her to perform remedial action. Ask the Soldier to describe the actions to perform for remedial action on cold and hot weapons, sluggish operation, and a runaway weapon.

Performance Measures

- | | <u>GO</u> | <u>NO GO</u> |
|---|------------------|---------------------|
| 1. Take immediate action for failure to fire within 10 seconds. | _____ | _____ |
| a. Hold the weapon on target. | | |
| b. Wait 5 seconds in case the weapon has a hangfire. | | |
| c. Within the next 5 seconds, pull the bolt to the rear, return the retracting slide handle to its forward position, and try to fire. | | |
| d. If the weapon fails to fire, wait 5 seconds and take appropriate remedial action. | | |
| 2. Take remedial action on a cool weapon. | _____ | _____ |
| a. Open the cover assembly. | | |
| b. Remove the ammunition belt. | | |

Performance Measures**GO** **NO GO**

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> c. Remove the ruptured cartridge and all obstructions from the T-slot, barrel assembly, and chamber. d. Reload and fire the weapon. e. If the weapon does not fire, disassemble it, and inspect it for dirt, obstructions, and defective parts. f. Clean the weapon, remove obstructions, replace defective parts, lubricate it, assemble it, and set the headspace and timing. g. Replace faulty ammunition. h. If the weapon still fails to fire, notify your supervisor. | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> |
| <ul style="list-style-type: none"> 3. Take remedial action on a hot weapon. <ul style="list-style-type: none"> a. Keep the cover closed and wait 15 minutes to allow the weapon to cool. b. Perform the same procedures as for cool weapon after waiting period. | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> |
| <ul style="list-style-type: none"> 4. Take action to stop uncontrolled automatic fire (runaway gun). <ul style="list-style-type: none"> a. Perform one of three actions: <ul style="list-style-type: none"> (1) Hold the weapon on target until it stops firing. (2) Have the assistant gunner twist the belt, causing the gun to jam. (3) Allow the weapon to fire remaining ammunition. b. Take the appropriate remedial action based on whether the weapon is hot or cold. | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> |
| <ul style="list-style-type: none"> 5. Correct sluggish operation. <ul style="list-style-type: none"> a. Clear the weapon. b. Disassemble, clean, and lubricate the weapon. c. Assemble the weapon. d. Set headspace and timing. | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> | <div style="border-bottom: 1px solid black; width: 40px; margin: 0 auto;"></div> |

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References**Required****Related**

FM 23-65

TM 9-1005-213-10

Mount a Caliber .50 M2 Machine Gun on an M3 Tripod **071-022-0010**

Conditions: Given a caliber .50 M2 machine gun, M3 tripod, pintle assembly, traverse and evaluation mechanism, and a requirement to mount a caliber .50 M2 machine gun on an M3 tripod.

Standards: Installed the gun and components on the tripod so that the gun can be manipulated and fired to engage targets from the tripod.

Performance Steps

1. Check to ensure weapon is clear.
2. Emplace the M3 tripod.
 - a. Pull open the front and rear legs and lock them in position.
 - b. Place the tripod in position with the front leg pointing in the direction that the muzzle of the gun will be pointing.
3. Install the caliber .50 M2 machine gun on the M3 tripod.
 - a. Open the front leg of the tripod.

NOTE: When installing the gun on the mount, the tripod legs should be seated well into the ground. At emplacement, loosen front leg, clamp handle and position front leg as required.

- b. Open rear legs of the tripod.

NOTE: Ensure sleeve lock latch secures traversing in place.

- c. Install T&E mechanism assembly on traversing bar.
- d. Attach the pintle to the front mounting hole on the machine gun receiver using pintle bolt, nut and cotter pin.
- e. Install machine gun on the tripod using the pintle and quick release pin.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to mount the caliber .50 M2 machine gun on the M3 tripod.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Checked to ensure weapon is clear.	_____	_____
2. Emplaced the M3 tripod.	_____	_____
3. Installed the caliber .50 M2 machine gun on the M3 tripod.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-65
 TM 9-1005-213-10

Dismount a Caliber .50 M2 Machine Gun From an M3 Tripod
071-022-0011

Conditions: Removed the mounting bracket assembly and the night vision sight, AN/TVS-5, from the caliber .50 M2 machine gun without damage to the equipment, and stowed in the carrying and storage case.

Standards: Removed the mounting bracket assembly and the night vision sight, AN/TVS-5, from the caliber .50 M2 machine gun without damage to the equipment, and stowed in the carrying and storage case.

Performance Steps

Ensure that the weapon is clear prior to attempting to dismount it from the M3 Mount and ensure that the gun's barrel is pointing away from friendly troops when attempting to remove it from the tripod.

- 1. Release the gun from its attachment to the T&E mechanism.
- 2. Release the weapons affixed pintle from its recess in the mount by releasing the pintle lock release cam.
- 3. Lift the weapon straight up out of the tripod head.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task conditions statement.

Brief Soldier: Tell the Soldier to remove the caliber .50 M2 machine gun from the M3 tripod.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Checked to ensure the weapon is clear.	_____	_____
2. Removed the caliber .50 M2 machine gun from the M3 tripod.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-65
TM 9-1005-213-10

Mount a Caliber .50 M2 Machine Gun on a Vehicle **071-022-0012**

Conditions: Given a caliber .50 M2 machine gun, with cradle and pintle assembly, ammunition tray, a vehicle equipped for mounting the caliber .50 M2 machine gun, and a requirement to mount the caliber .50 M2 machine gun on the vehicle.

Standards: Mounted the caliber .50 machine gun so that the cradle and pintle assembly was correctly installed and locked in the vehicle cupola/pedestal/ring mount; the ammunition tray is installed on the T-bar; the machine gun was correctly seated and secured in the cradle and could be rotated to fire in any direction. (When required, the train and elevating assembly is secured to the applicable mount and attached to the machine gun.)

Performance Steps

1. Mount the caliber .50 machine gun on an M113-series vehicle.
 - a. Lock the commander's/gunner's cupola at any azimuth.
 - b. Install and lock the cradle and pintle assembly in the cupola.
 - c. Install the ammunition tray on the T- bar.
 - d. Remove the cradle pins from the pintle, seat the gun in the cradle so that the front and rear holes in the machine gun are in line with the holes in the cradle, then install the cradle pins.
2. Mount the caliber .50 machine gun on an M151-series vehicle.
 - a. Install and lock the cradle and pintle assembly in the pedestal mount.
 - b. Install the ammunition tray on the T- bar.
 - c. Remove the cradle pins from the pintle, seat the gun in the cradle so that the front and rear holes in the machine gun are in line with the holes in the cradle, then insert the cradle pins to secure the gun in the cradle.
 - d. Install the train and elevating assembly on the mount and attach it to the gun.
3. Mount the caliber .50 machine gun on an M998-series vehicle.
 - a. Lock the weapon platform at any azimuth.
 - b. Install and lock the cradle and pintle assembly in the pedestal mount.
 - c. Install the ammunition tray on the T- bar.
 - d. Remove the cradle pins from the pintle, seat the gun in the cradle so that the front and rear holes in the machine gun are in line with the holes in the cradle, then insert the cradle pins to secure the gun in the cradle.
 - e. Install the train and elevating assembly on the mount and attach it to the gun.
4. Mount the caliber .50 machine gun on a 2-1/2 to 5 ton cargo vehicle.
 - a. Lock the ring mount at any azimuth.
 - b. Install and lock the cradle and pintle assembly in the ring mount.
 - c. Install the ammunition tray on the T- bar.
 - d. Remove the cradle pins from the pintle, seat the gun in the cradle so that the front and rear holes in the machine gun are in line with the holes in the cradle, then insert the cradle pins to secure the gun in the cradle.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to mount the caliber .50 M2 machine gun on a vehicle.

Performance Measures

1. Mounted the caliber .50 machine gun on one of the following vehicles:
 - a. M113-series vehicle.
 - (1) Locked the commander's/gunner's cupola at any azimuth.

GO **NO GO**

Performance Measures**GO** **NO GO**

- (2) Installed and locked the cradle and pintle assembly in the cupola mount.
- (3) Installed the ammunition tray on the T- bar.
- (4) Removed the cradle pins from the pintle, seated the gun in the cradle so that the front and rear holes in the machine gun were in line with the holes in the cradle, then installed the cradle pins.
- b. M151-series vehicle.
 - (1) Installed and locked the cradle and pintle assembly in the pedestal mount.
 - (2) Installed the ammunition tray on the T- bar.
 - (3) Removed the cradle pins from the pintle, seated the gun in the cradle so that the front and rear holes in the machine gun were in line with the holes in the cradle, then inserted the cradle pins to secure the gun in the cradle.
 - (4) Installed the train and elevating assembly on the mount and attached it to the gun.
- c. M998-series vehicle.
 - (1) Locked the weapon platform at any azimuth.
 - (2) Installed and locked the cradle and pintle assembly in the pedestal mount.
 - (3) Installed the ammunition tray on the T- bar.
 - (4) Removed the cradle pins from the pintle, seated the gun in the cradle so that the front and rear holes in the machine gun were in line with the holes in the cradle, then inserted the cradle pins to secure the gun in the cradle.
- d. 2-1/2 to 5 ton vehicle.
 - (1) Locked the ring mount at any azimuth.
 - (2) Installed and locked the cradle and pintle assembly in the ring mount.
 - (3) Installed the ammunition tray on the T- bar.
 - (4) Removed the cradle pins from the pintle, seated the gun in the cradle so that the front and rear holes in the machine gun were in line with the holes in the cradle, then inserted the cradle pins to secure the gun in the cradle.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-65

TM 9-1005-213-10

Dismount a Caliber .50 M2 Machine Gun From a Vehicle

071-022-0013

Conditions: Removed the mounting bracket assembly and the night vision sight, AN/TVS-5, from the caliber .50 M2 machine gun without damage to the equipment, and stowed in the carrying and storage case.

Standards: Removed the mounting bracket assembly and the night vision sight, AN/TVS-5, from the caliber .50 M2 machine gun without damage to the equipment, and stowed in the carrying and storage case.

Performance Steps

1. Dismount the caliber.50 M2 machine gun from an M113-series vehicle.
 - a. Lock the commander's/gunner's cupola at any azimuth.
 - b. Remove the ammunition tray.
 - c. Remove the cradle pins and lift the gun from the pintle.
 - d. Unlock and remove the pintle from the cupola.
2. Dismount the caliber.50 M2 machine gun from an M151-series vehicle.
 - a. Remove the ammunition tray.
 - b. Remove the cradle pins and lift the gun from the pintle.
 - c. Remove the train and elevating assembly.
 - d. Loosen the locking lever on the pedestal and remove the pintle.
3. Dismount the caliber.50 M2 machine gun from an M998-series vehicle.
 - a. Lock the weapon platform at any azimuth.
 - b. Remove the ammunition tray.
 - c. Remove the cradle pins and lift the gun from the pintle.
 - d. Remove the train and elevating assembly.
 - e. Loosen the pedestal bolts and remove the pintle.
4. Dismount the caliber.50 M2 machine gun from a 2-1/2 to 5 ton cargo vehicle.
 - a. Lock the ring mount at any azimuth.
 - b. Remove the ammunition tray.
 - c. Remove the cradle pins and lift the gun from the mount.

Evaluation Preparation: Setup: At the test site, provide the Soldier with all the equipment given in the task condition statement.

Brief Soldier: Tell the Soldier to remove the caliber .50 M2 machine gun from the vehicle.

Performance Measures

GO **NO GO**

1. Dismounted the caliber.50 M2 machine gun from one of the following vehicles:
 - a. M113-series vehicle.
 - (1) Locked the commander's/gunner's cupola at any azimuth.
 - (2) Removed the ammunition tray.
 - (3) Removed the cradle pins and lifted the gun from the pintle.
 - (4) Unlocked and removed the pintle from the cupola.
 - b. M151-series vehicle.
 - (1) Removed the ammunition tray.
 - (2) Removed the cradle pins and lifted the gun from the pintle.
 - (3) Removed the train and elevating assembly.
 - (4) Loosened the locking lever on the pedestal and removed the pintle.
 - c. M998-series vehicle.
 - (1) Locked the weapon platform at any azimuth.

_____ _____

Performance Measures**GO** **NO GO**

- (2) Removed the ammunition tray.
- (3) Removed the cradle pins and lifted the gun from the pintle.
- (4) Removed the train and elevating assembly.
- (5) Loosened the pedestal bolts and removed the pintle.
- d. 2-1/2 to 5 ton vehicle.
 - (1) Locked the ring mount at any azimuth.
 - (2) Removed the ammunition tray.
 - (3) Removed the cradle pins and lifted the gun from the mount.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References**Required****Related**

FM 23-65

Construct a Fighting Position for a Caliber .50 M2 Machine Gun
071-022-0014

Conditions: In a combat environment, given a caliber .50 M2 machine gun, an M3 machine gun mount with a traverse and elevation (T&E) mechanism, a designated sector of fire, a designated principal direction of fire (PDF) or final protection line (FPL), materials required for constructing and camouflaging the position, a requirement to construct and camouflage a fighting position, and an added overhead cover as the situation permits.

Standards: Constructed a fighting position for a caliber .50 M2 machine gun. Dug the position to specifications, camouflaged, and constructed overhead cover and revetments as time, situation, and materials permit.

Performance Steps

NOTE 1: Ensure that adequate security has been established and maintained throughout the construction and camouflaging process.

1. Identify the designated sector of fire and the PDF or FPL.
2. Sketch an outline of the position on the ground and the frontal cover (if the position must be improved).
3. Position the machine gun within the sketched out area on the ground and orient it in the desired direction of fire.

NOTE 2: Ensure that when sketching the firing platform, sufficient room is provided for the assistant gunner to assist as required in the firing process.

4. Sketch out the location of the firing platform.
5. Mark the location of the legs of the tripod.

NOTE 3: The platform must not be so low that the gun cannot be traversed across its designated sector of fire. Lowering the gun reduces the profile of the gunner when he is firing and reduces the height of the frontal cover needed. When the frontal cover is high and thick enough, the remaining earth is used to build the rear and flank parapets.

6. Remove the gun to the front of the position and dig down the firing platform where the gun will be emplaced.

NOTE 4: The position is dug deep enough to provide protection and still allow the gunner to fire the weapon and cover his assigned sector of fire.

7. After the firing platform has been dug down to the desired depth, continue to dig the remainder of the position placing the earth removed to the front of the position where frontal cover is needed.
8. Upon completion of digging the position to the desired depth, dig a minimum of three grenade sumps in the bottom of the position, (one on each rear corner and one centered on the front of the position).

NOTE 5: Overhead cover must be constructed so that it blends naturally with the terrain.

9. Construct an overhead cover and camouflage the position, as time, situation, and availability of materials permit. Allow the area selected for the position to blend naturally into the terrain and not present an inviting target to enemy fire.

Evaluation Preparation: Setup: This task should be evaluated during a unit's field training exercise. At the test site, provide all equipment and materials given in the task condition statement. The location selected should contain all of the characteristics of a good machine gun position.

NOTE: The positions degree of completion depends upon the time available. During training, comply with unit SOP and any local regulations concerning the cutting of live vegetation, digging holes, and preventing erosion.

Brief Soldier: Tell the Soldier to position the machine gun to cover the FPL or PDF, to outline the position on the ground, and to construct the position to meet all requirements.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Positioned the machine gun to lay on the FPL or PDF.	_____	_____
2. Ensured that the secondary sector can also be covered.	_____	_____
3. Outlined the position on the ground.	_____	_____
4. Dug the firing platform first.	_____	_____
5. Positioned the gun on the firing platform to cover the FPL or PDF.	_____	_____
6. Constructed a frontal, flank, and rear cover.	_____	_____
7. Completed construction of the position to the extent required.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References Required

Related
FM 23-65

Zero an MK19 Machine Gun 071-030-0003

Conditions: Given a MK19 machine gun, a MK64 gun cradle, a zeroed traverse and elevation (T&E) assembly mounted on a vehicle or M3 tripod, a stationary target located at a known range (400 meters) from the firing position, and linked 40-mm grenade ammunition.

Standards: Adjust the sights on a MK19 machine gun so that a correct sight picture will cause a fired round to impact the target at the point of aim.

Performance Steps

1. Prepare the sights for zeroing (Figure 1).

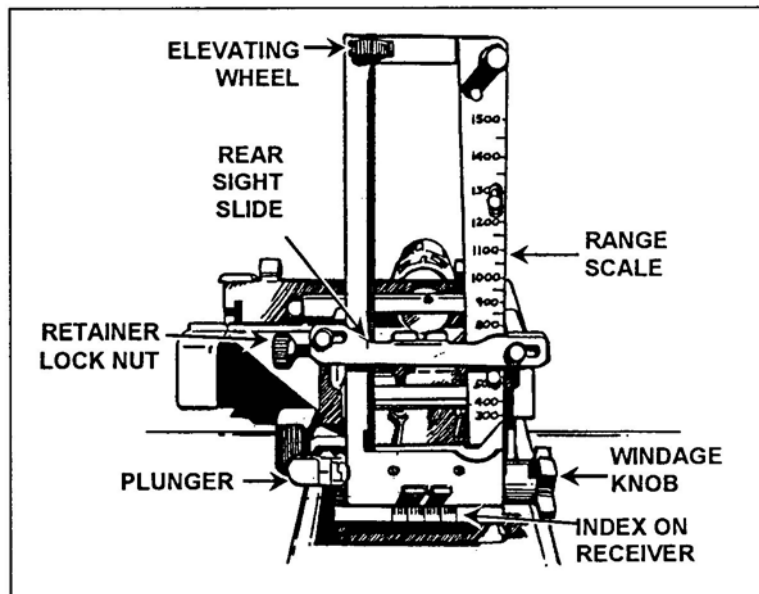


Figure 1. Preparing the Sights for Zeroing

- a. Press the plunger to release the sight frame. Raise the sight frame until it locks into the "up" position.
- b. Loosen the retainer lock nut. Push in on the lock nut. Move the rear sight slide to the meter mark that corresponds to the distance to the target (400 meters).
- c. Tighten the retainer locknut.
- d. Set the windage knob at the zero index line.
2. Assume a firing position.
3. Align the sights on the base of the target using the T&E mechanism.
4. Fire a single round. Spot the impact of the round. If the round is on target, fire another short burst to confirm the zero. If the round is not on target, go to Step 5.
5. Adjust for a round that is not on target.
 - a. Elevation.
 - (1) If the round is short, turn the knob of the elevating wheel clockwise to move the impact of the round up onto the target.
 - (2) If the round is long, turn the knob of the elevating wheel counterclockwise to move the impact of the round down onto the target.
 - b. Windage.

Performance Steps

- (1) If the round is to the right, adjust the sight to the left by turning the windage knob counterclockwise to move the impact of the round onto the target.
- (2) If the round is to the left, adjust the sight to the right by turning the windage knob clockwise to move the impact of the round onto the target.

NOTE: Loosen the traversing slide lock lever to adjust the gun back onto the target. Before you fire the next round, retighten the traversing slide lock lever.

6. Once you have zeroed the gun, align the range plate scale at the exact range of the zero and tighten it.

Evaluation Preparation: Setup: Evaluate this task during live firing of Table 1, Task 3, IAW FM 23-27. Provide the Soldier with equipment required to fire Table 1.

Brief Soldier: Tell the Soldier he will be evaluated on his ability to fire Table 1, Task 3. Brief him on the task conditions, standards, and ammunition.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Prepared sights for zeroing in accordance with (IAW) Step 1.	_____	_____
2. Assumed a firing position.	_____	_____
3. Aligned sights on the base of the target.	_____	_____
4. Fired a single round and observed the impact of the round.	_____	_____
5. Adjusted elevation and windage to zero weapon.	_____	_____
6. Aligned and tightened the range plate scale after zeroing.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required
FM 23-27

Related
FM 23-14
TM 9-1005-201-10

Correct Malfunctions of an MK19 Machine Gun
071-030-0008

Conditions: Given a loaded MK19 machine gun mounted on an M3 tripod or vehicle, linked 40-mm grenade ammunition, a caliber .50 cleaning rod, a bore obstruction device (BOD), an assistant gunner, rifle bore cleaner (RBC), lubricating oils (lubricating oil, semifluid, automatic weapons [LSA] and either LSAT or lubricating oil arctic weather [LAW]), grease molybdenum disulfide (GMD), cleaning solvent (PD680), wiping rags, cloth (abrasive crocus), cleaning rod assembly, small arms cleaning brushes, and one of the following situations: the weapon has failed to fire; the weapon is firing sluggishly; or the weapon has uncontrolled fire (continuous fire after the trigger is released).

Standards: Take immediate action on a MK19 machine gun that has failed to fire without identifying the cause of the malfunction. If immediate action is unsuccessful, perform remedial action to identify the cause of the malfunction. Take immediate action to secure a runaway MK19 machine gun; then take remedial action to eliminate the malfunction. Take corrective action for a MK19 machine gun that is firing sluggishly.

Performance Steps

1. Apply immediate action when the weapon fails to fire (during peacetime and during training).

NOTE: Clear all nonessential personnel away from the gun position.

DANGER:

1. If anything unusual occurs during firing (including short recoil, out of battery, excess smoke, flash, loud or muffled report, malfunction, or stoppage) immediately inspect the weapon. Clear the weapon. Check the barrel for obstruction. Check the feeder, bolt face, and receiver for damage or unusual debris. DO NOT try to clear an obstructed bore. To get assistance, follow the instructions in the local or unit standing operating procedure (SOP). Continued firing may cause death or injury.
2. DO NOT relink or fire ammunition that has been cycled through the weapon.

WARNING:

1. Clear all nonessential personnel away from the gun position.
2. If, when you fire a round, you—
 - Hear a muffled sound
 - See excess smoke coming out of the chamber area
 - See excess debris, gas, or both coming from below the gun

DO NOT perform immediate action.

DO notify your supervisor.

- a. Keep the weapon pointed at the target.
- b. Pull the bolt to the rear to charge the weapon and have the assistant gunner catch the live round as it is ejected.
- c. If the weapon will not charge, stop immediate action and apply remedial action to clear a jammed bolt (Step 2b).
- d. Push the charging handles forward and up.
- e. Place the safety switch in the safe (S) position.
- f. Check for bore obstruction.
 - (1) Make sure the safety switch is on safe (S).

WARNING:

1. DO NOT let the bolt go forward—this could cause a round to fire accidentally.
2. DO NOT insert your hands into the receiver with the bolt locked to the rear on sear. If you do so, you could suffer a severe injury.
3. DO make sure the safe/fire switch is in the safe (S) position.
 - (2) Lower the charging handles, maintain your grip, and apply back pressure to the bolt.
 - (3) Have the assistant gunner open the top cover and check the bolt face for a live round.

Performance Steps

- (4) If a live round, spent case, or debris is present—
 - (a) Have the assistant gunner remove the catch bag and be prepared to catch live any live ammunition that falls from the bottom of the weapon.
 - (b) Charge the bolt completely until the bolt clicks (locks) to the rear. Return the handles to the forward position, handles down.
 - (c) If a round is still present, have the assistant gunner clear it from the bolt face by inserting a cleaning rod through the slot in the charger handle assembly and catching the round.
 - (d) Have the assistant gunner place the BOD into the chamber end of the barrel (weighted end first).
 - (e) Snake the BOD into the barrel.
 - (f) If the cable stops feeding, pull it back and push it forward again.
 - (g) If you cannot push the cable forward any farther the bore is obstructed. STOP. Notify your supervisor at once.

WARNING: If you find that the bore of the weapon is obstructed, notify your supervisor and follow your unit SOP. Never try to remove an obstructing round from the bore. Only trained and qualified personnel should do so. DO NOT transport a weapon with a projectile lodged in the bore.

- (5) If you are able to insert the BOD cable through the barrel so that you see the weighted end of the cable protruding from the flash suppressor, then the barrel is clear.
- (6) Move the safety switch to the fire (F) position and try to fire.
- (7) If the weapon does not fire, put the safety switch on safe (S) and wait 10 seconds.
- (8) Pull the bolt to the rear. Have the assistant gunner catch the live round as it ejects.
- (9) Notify your supervisor.

2. Apply immediate action during combat.

- a. Press the charger handle locks, and rotate the charger handles down.
- b. Pull the charger handles to the rear until the bolt sears.
- c. Push the charger handles forward and rotate them up.
- d. Relay the gun and fire.
- e. If the gun fails to fire, apply remedial action.

WARNING: Do not use combat misfire procedures during peacetime or training. Serious injury can result if you do not observe precautions.

NOTE: Both charger handles must be forward and up for firing. If either handle is down, the gun will not fire.

3. Apply remedial action to correct malfunctions.

- a. Correct sluggish operation of a MK 19 machine gun.
 - (1) Clean weapon and perform operator-level maintenance.
 - (2) Check recoil springs for weakness and bent guide rods.
 - (3) If you find defects that are not correctable, notify your supervisor.

WARNING: Be sure bolt is forward before removing back plate pin assembly. Otherwise, serious injury could result!

- b. Clear a jammed bolt (weapon will not charge).

DANGER: Perform these procedures in sequence. Otherwise, the bolt could spring forward suddenly and fire a round, causing injury or death.

NOTE: Clear all nonessential personnel away from the gun position.

- (1) Place the safety switch on the safe (S) position.
- (2) Press the charger handle locks, and rotate the charger handles down.
- (3) Pull the charger handles to the rear as far as possible. Maintain rearward pressure on them, and have the assistant gunner lift the top cover.

DANGER: DO NOT allow the bolt to slam forward while you are opening the top cover. If the bolt were to slam forward while you are opening the top cover, the weapon could fire a live round, causing injury or death.

Performance Steps

- (4) Pull the charger handles to the rear until the bolt clicks (locks); make sure the bolt stays to the rear when you release the charger handles.
- (5) Insert the cleaning rod section through the slot in the side of the receiver. Prepare to catch the ejected round.
- (6) Raise the cleaning rod to force the live round down. Catch the live round as it ejects.
- (7) Remove the ammunition belt from feeder.
- (8) Reposition the ammunition belt in the feeder.
- (9) Place the safety switch on fire (F) position.
- (10) Ride the bolt forward by grasping one charging handle and depressing the trigger.
- (11) Make sure the feed slide assembly is to the left.
- (12) Make sure the secondary drive lever is engaged with the feed slide pin. If not, engage the forked end with the feed slide pin.
- (13) Close the top cover gently.
- (14) Charge the weapon and try to fire.
- (15) If the bolt jams again, repeat (1) through (7). Then place the safety switch on the safe (S) position, and notify your supervisor.

c. Apply corrective action for uncontrolled fire (runaway gun).

WARNING: Never try to twist the belt with your hands. This could result in serious injury to personnel.

- (1) Keep the gun pointed on target.
- (2) Lower one charging handle to make the gun stop firing.
- (3) Place the safety switch on safe (S) position.
- (4) Clear the weapon and report its condition to your supervisor.

Evaluation Preparation: Setup: Provide Soldier with the equipment and personnel listed in the conditions statement.

Brief Soldier: Tell the Soldier to take the correct action for each situation listed in standards, one situation at the time. If it is unclear what actions the Soldier is performing, have the Soldier describe the action.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Apply immediate action when the weapon fails to fire.	—	—
a. Peacetime and training.		
b. Combat only.		
2. Apply remedial action to correct malfunction.	—	—
a. Correct the sluggish operation of a MK19 machine gun.		
b. Clear a jammed bolt (weapon will not charge).		
c. Apply corrective action for uncontrolled fire (runaway gun).		

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References

Required

Related

FM 23-27
TM 9-1010-230-10

Mount an MK19 Machine Gun on a Vehicle**071-030-0009**

Conditions: Given a cleared MK19 machine gun; an assistant gunner; an MK64 gun mount; a pintle adapter assembly; a traversing and elevation (T&E) assembly installed in the pivot arm assembly; a feed throat assembly; a mounting assembly for an ammunition can bracket; two 9/16-inch open-ended wrenches; one 3/8-inch open-ended wrench; and a vehicle equipped with either an M4 pedestal mount, an M66 ring mount, or a high mobility multipurpose wheeled vehicle (HMMWV) armament carrier ring pedestal.

Standards: Mount the MK19 on a vehicle carrier correctly and without damage to equipment or injury to personnel.

Performance Steps

1. Install the pintle adapter.
 - a. HMMWV armament carrier ring pedestal (Figure 1).

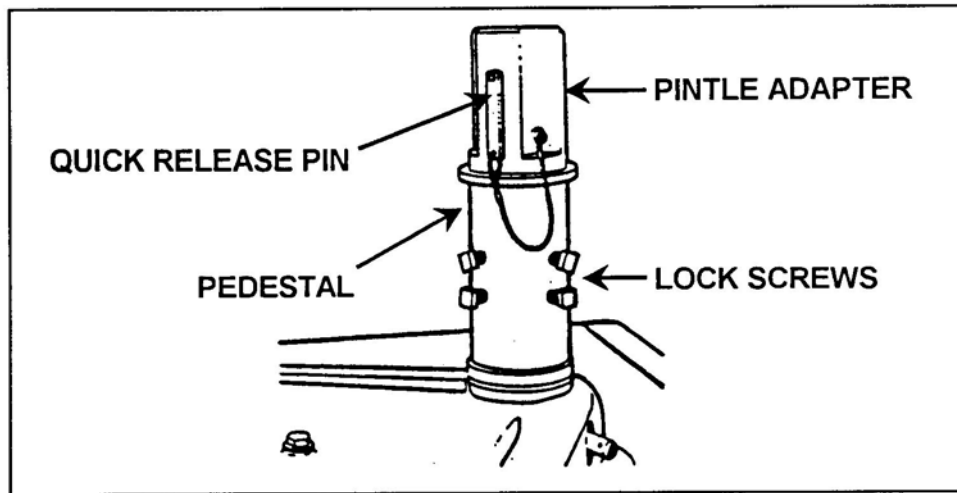


Figure 1. HMMWV Armament Carrier Ring Pedestal

- (1) Using a 3/8-inch, open-ended wrench, loosen the HMMWV pedestal and the pintle adapter lock screws. Turn all four screws counterclockwise until the threaded ends are flush with the pedestal's inner wall.
- (2) Insert the pintle adapter assembly into the HMMWV pedestal. Tighten the lock screws. Using a 3/8-inch, open-ended wrench, turn the screws clockwise to tighten them. Pull upward on the pintle adapter to make sure it is secure.
- (3) Remove the pintle adapter quick release pin. Press in on the pin's quick release button, and pull the pin from the pintle adapter.

Performance Steps

- b. M4 pedestal (Figure 2).

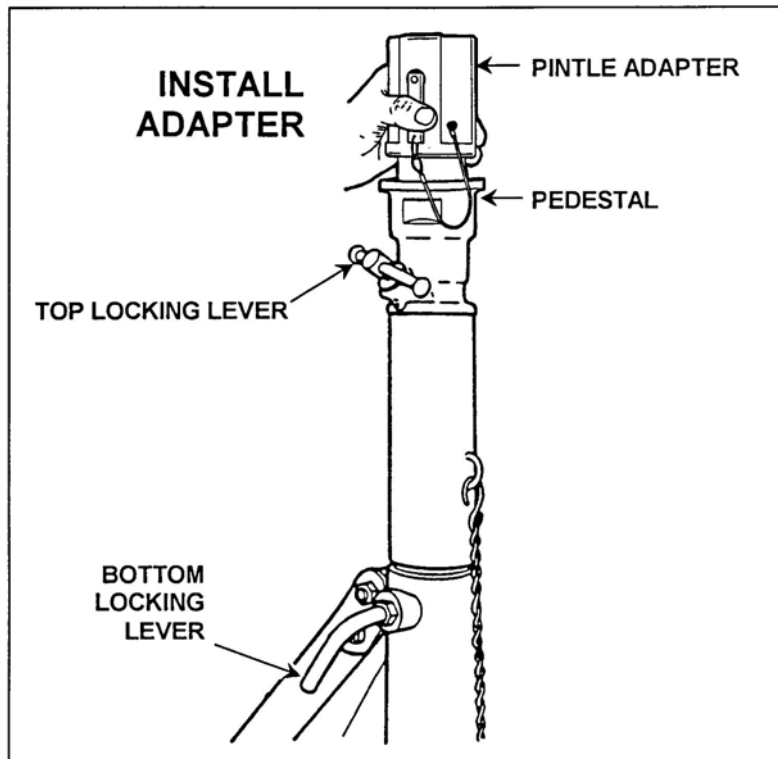


Figure 2. M4 Pedestal

- (1) Loosen the lower pedestal-locking lever. Turn the upper pedestal until the upper locking lever is on same side as the lower pedestal-locking lever. Tighten the lower pedestal-locking lever.
 - (2) Loosen the upper pedestal locking lever.
 - (3) Insert the pintle adapter assembly into pedestal mount.
 - (4) Tighten the upper pedestal locking lever. Pull up on the pintle adapter assembly to make sure it is secure.
 - (5) Remove the pintle adapter quick release pin.
- c. M66 ring mount (A, Figure 3).
- (1) Stand inside the M66 ring facing the pintle adapter hole; rotate the pintle lock handle upward.
 - (2) Insert the pintle adapter assembly into the pedestal (B, Figure 3).
 - (3) Rotate the pintle lock handle downward to secure the pintle adapter. Pull up on the pintle adapter to make sure it is locked in place.
 - (4) Remove the pintle adapter quick release pin.
- d. HMMWV Interchangeable Mount System (HIMS). Follow same procedures as for HMMWV armament carrier ring pedestal (Step 1a).

Performance Steps

2. Mount the MK64 gun mount (Figure 4).

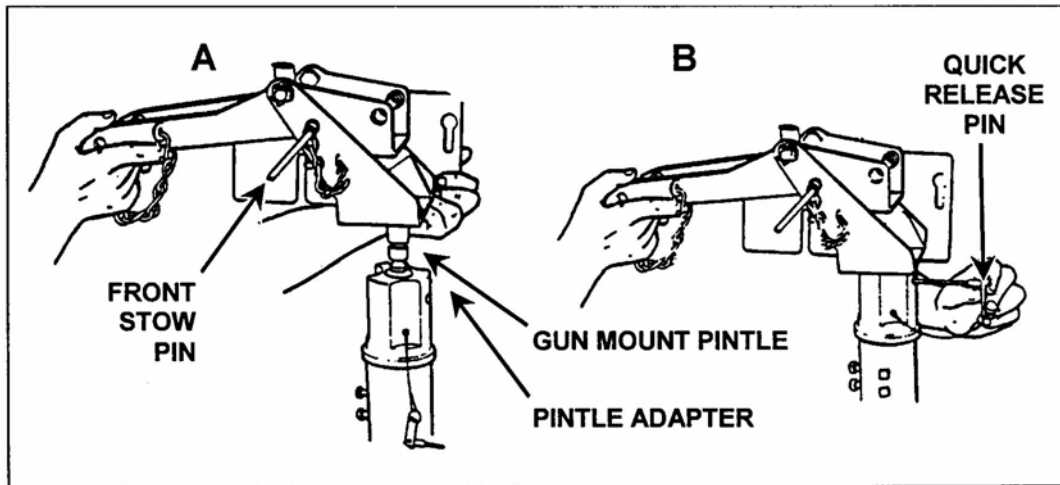


Figure 4. Mounting the MK64 Gun Mount

- a. Insert the front stow pin.
- b. Insert the gun mount pintle into the top of the pintle adapter assembly.
- c. Press in on the pintle adapter quick release pin button, and insert the pin. Pull upward and twist the gun mount. It should be locked into the pintle adapter, but at the same time it should also traverse freely left and right.

3. Attach the T&E assembly (A, Figure 5).

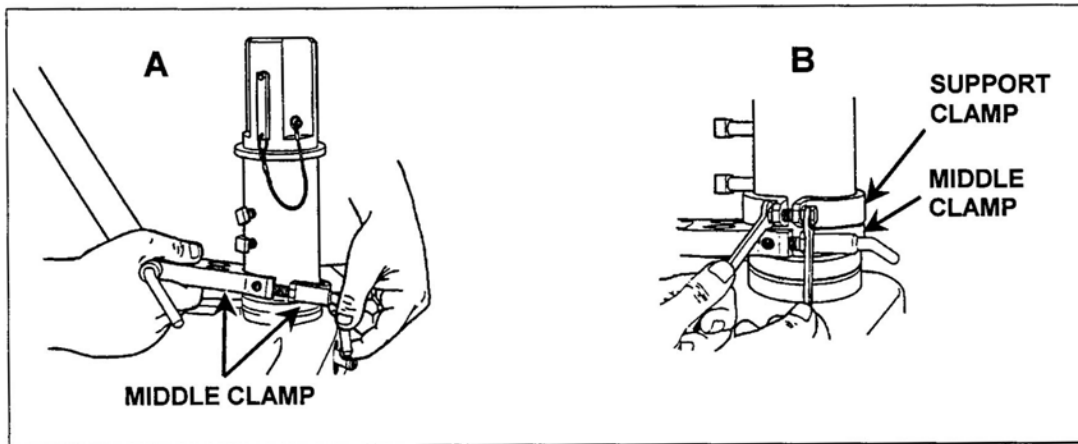


Figure 5. Attaching the T&E Assembly

- a. Separate the middle clamp on the T&E assembly. Remove the train lock handle by turning it counterclockwise. Use a 9/16-inch, open-ended wrench to remove the hex head screw on the other side of the clamp.
- b. Attach the middle clamp to the HMMWV pedestal post.
 - (1) Assemble the middle clamp around the base of the pedestal, about 2 inches below the welded pin (B, Figure 5). Tighten the clamp by turning the train lock clockwise. Using a 9/16-inch wrench, tighten the screw on other side of clamp the same amount that you tightened the first screw.

Performance Steps

- (2) Attach two support clamps. Using two 9/16 wrenches, attach one support clamp above and one below the already installed middle clamp. Tighten each screw two turns until snug.
- c. Attach the middle clamp to the M4 pedestal (A, Figure 6).

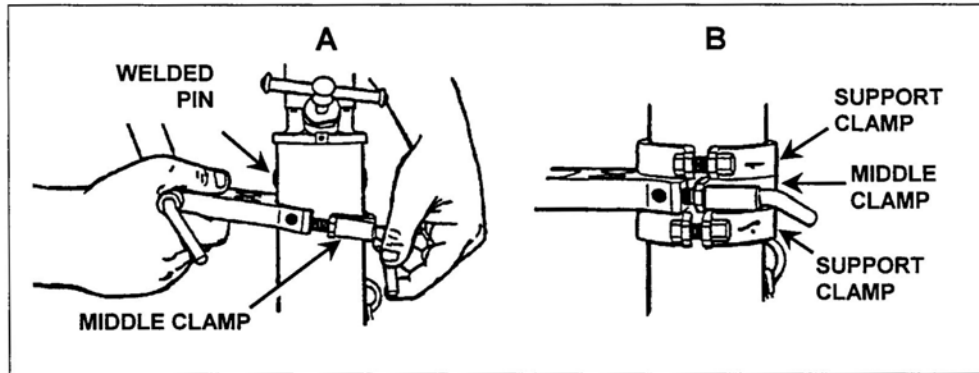


Figure 6. Attaching the Middle Clamp to M4 Pedestal

- (1) Assemble the middle clamp around the pedestal, about 2 inches below the welded pin (B, Figure 6). Tighten the clamp by turning the train lock clockwise. Using 9/16 wrench, equally tighten the hex head screw on other side of clamp.
 - (2) Attach two support clamps. Using two 9/16 wrenches, attach one support clamp above and below the already installed middle clamp. Tighten each screw two turns until snug.
4. Attach the T&E assembly to the gun mount (Figure 7).

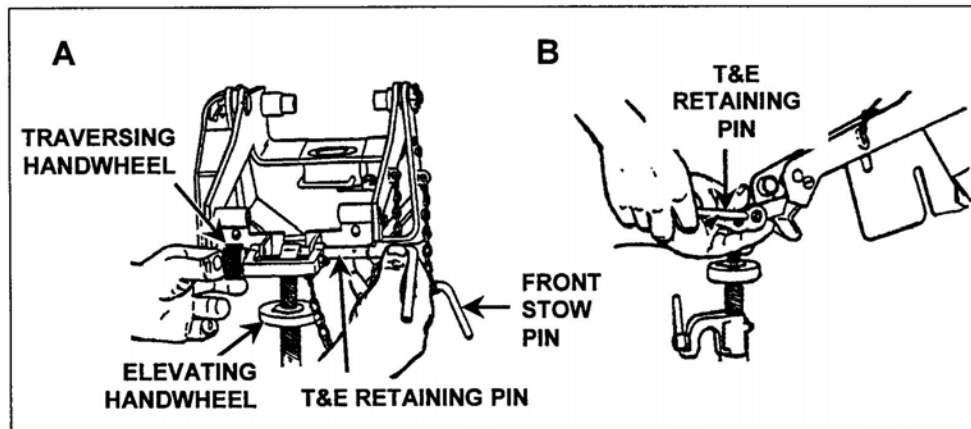


Figure 7. Attaching the T&E Assembly to the Gun Mount

- a. Remove the front stow pin from the gun mount.
- b. Pull out the T&E assembly retaining pin.
- c. Make sure the T&E elevating handwheel is set at 250 mils. Position the lock lever to the rear, and make sure the traversing handwheel is to the left.
- d. To align the T&E elevating assembly holes with the lower rear holes in gun mount cradle, turn the elevating handwheel.
- e. Insert the T&E retaining pin through the holes from the right side only. Rotate the locking pin to locked position.

Performance Steps

5. Attach the ammunition can mounting bracket assembly (Figure 8).

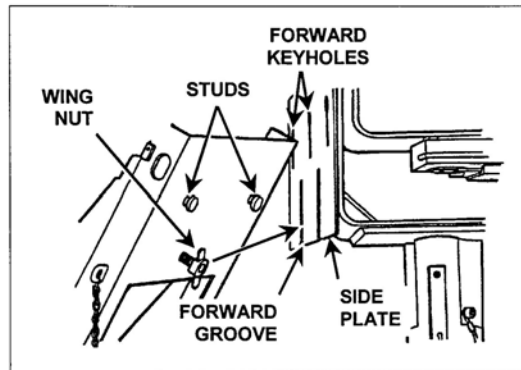


Figure 8. Attach the Ammunition Can Mounting Bracket Assembly

- a. Partially unscrew the wing nut on the bracket threaded stud. Align the wing nut on the threaded stud with the forward groove in the side plate of the gun mount. Slide the threaded stud upward into the forward groove, until the two welded pins seat in the two forward keyholes.
- b. Slide the bracket downward in the slots. Reach behind the gun mount side plate, and tighten the wing nut. Check to make sure the assembly is securely locked into the side plate of the gun.

6. Install the MK19 machine gun (Figure 9).

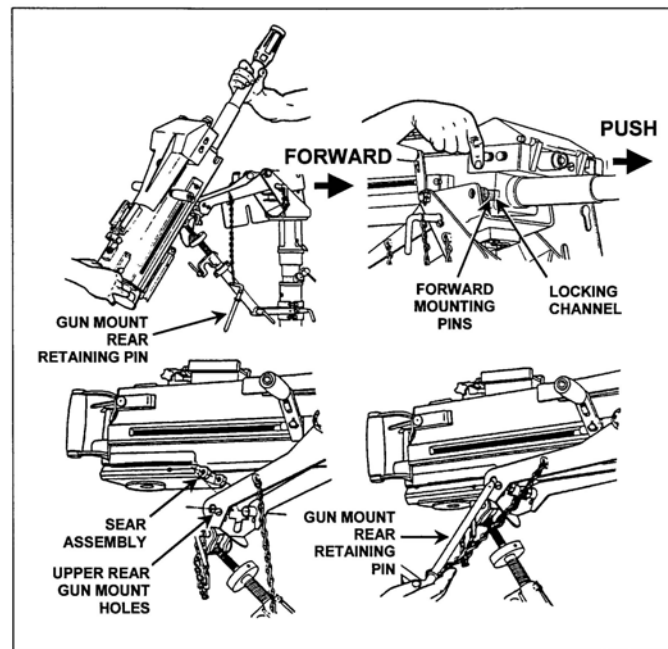


Figure 9. Install the MK19 Machine Gun

- a. Remove the rear retaining pin from the gun mount.
- b. With the help of the assistant gunner, lift the weapon onto the gun mount cradle, with the barrel pointing towards the forward end of the gun mount assembly.
- c. Lock the front portion of the weapon into the gun mount cradle.
 - (1) Lower the muzzle slightly. Align the receiver locking channels with the two forward mounting pins on the gun mount cradle.
 - (2) To seat the mounting pins into the locking channels, push the weapon forward.

Performance Steps

- d. Lock the rear of the weapon to the gun mount cradle. Align the holes in the weapon sear assembly with the upper rear holes in the gun mount cradle. Insert the gun mount cradle rear retaining pin, and rotate the handle downward to the locked position.

WARNING: A two-man lift is required for the MK 19 machine gun and for each fully loaded M548 ammunition container. DO NOT try to lift either alone.

7. Attach the feed throat assembly (Figure 10).

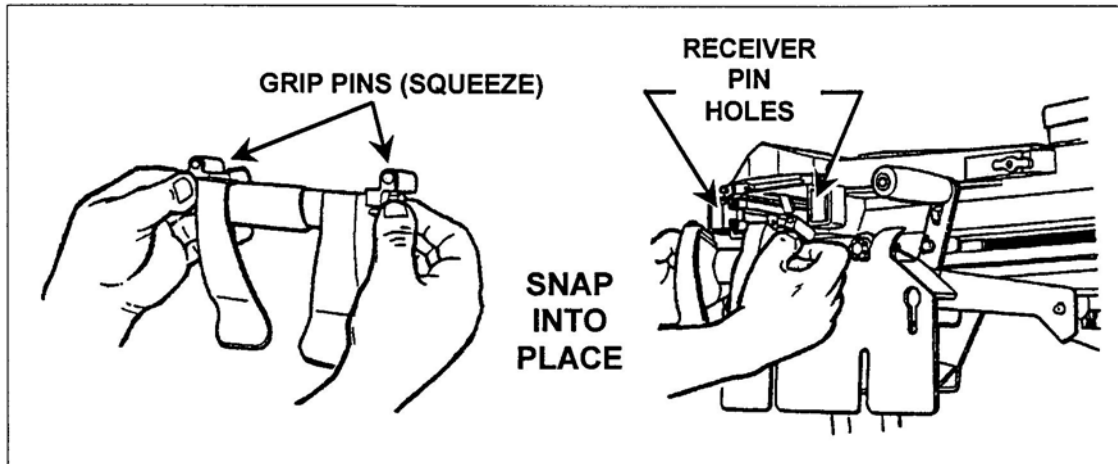


Figure 10. Attaching the Feed Throat Assembly

- a. Squeeze together the spring-loaded grip pins on the feed throat assembly.
- b. Insert the feed throat into the forward left-hand slots of the receiver. Release the pins. Check to make sure the assembly is secure.

Evaluation Preparation: Setup: Provide the Soldier with equipment listed in the condition statement (if the Soldier is to mount the MK19 on a HMMWV equipped with armament carrier ring, provide only one support clamp).

Brief Soldier: Tell the Soldier to mount the MK19 on the vehicle.

Performance Measures

1. Installed the pintle adapter.
2. Installed the MK64 gun mount.
3. Attached the T&E assembly.
4. Attached the T&E assembly to the gun mount.
5. Attached the ammunition can mounting bracket assembly.
6. Installed the MK19 machine gun.
7. Attached the feed throat assembly.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required
FM 23-27

Related
TM 9-1010-230-10

Dismount an MK19 Machine Gun From a Vehicle

071-030-0010

Conditions: Given an assistant gunner, a cleared MK19 machine gun mounted on a vehicle equipped with M4 pedestal mount, M66 ring mount, or high mobility multipurpose wheeled vehicle (HMMWV) armament carrier ring and pedestal.

Standards: Remove the MK19 machine gun and components from the vehicle carrier without damage to equipment or injury to personnel.

Performance Steps

WARNING: A two-man lift is required for the MK19 machine gun and each fully loaded M548 ammunition container.

DO NOT try to carry either the weapon or a fully loaded ammunition container by yourself.

1. Remove the MK19 from a vehicle equipped with the M4 pedestal.
 - a. Remove the feed throat assembly.
 - b. Remove the rear retaining pin from the gun mount cradle.
 - c. Remove the front stow pin from the gun mount cradle.
 - d. Lift the MK 19 from the M4 pedestal.
 - e. Remove the ammunition container bracket.
 - f. Remove the support clamps from the M4 pedestal.
 - g. Remove the quick release pin from the pintle adapter.
 - h. Remove the gun mount from the M4 pedestal.
 - i. Loosen the upper locking lever on the M4 pedestal.
 - j. Lift the pintle adapter from the M4 pedestal.
 - k. Tighten the upper locking lever on the M4 pedestal.
2. Remove the MK19 from the HMMWV armament carrier ring and pedestal.
 - a. Perform Steps 1a through 1h for the M4 pedestal.
 - b. Loosen the pedestal bolts, and remove the pintle adapter.
 - c. Tighten the pedestal bolts.
3. Remove the MK19 from a vehicle equipped with an M66 ring mount.
 - a. Perform Steps 1a through 1h for the M4 pedestal.
 - b. Rotate the pintle lock handle to the unlocked position.
 - c. Pull the gun rearward until free of the forward mounting lugs on the cradle, and remove the gun from the cradle mount.

Evaluation Preparation: Setup: Provide the Soldier with equipment and personnel listed in the conditions statement.

Brief Soldier: Tell the Soldier to correctly dismount the MK19 from the vehicle without damage to equipment or injury to personnel.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Remove MK19 from vehicle equipped with M4 pedestal.	_____	_____
2. Remove MK19 from the HMMWV armament carrier ring and pedestal.	_____	_____
3. Remove the MK19 from vehicle equipped with M66 ring mount.	_____	_____

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO then show him what he did wrong and how to do it correctly.

**References
Required**

Related
FM 23-27

Mount an MK19 Machine Gun on an M3 Tripod

071-030-0011

Conditions: Given a sector of fire, an assistant gunner, and a MK19 machine gun with feed throat assembly, MK64 gun mount, M3 tripod, and traverse and elevation (T&E) mechanism.

Standards: Ground mount the MK19 machine gun on the M3 tripod without damage to equipment or injury to personnel.

Performance Steps

WARNING: A two-man lift is required for the MK19 machine gun and each fully loaded M548 ammunition container. DO NOT try to lift either by yourself.

1. Set up the M3 tripod.
 - a. Select a level and stable location and position the tripod so that the gun will be oriented toward the assigned sector of fire.
 - b. Open and lock the rear legs of the tripod in the open position (Figure 1).
 - c. Open and adjust the front leg of the tripod so that it forms an angle of about 60 degrees to the ground. Stabilize the legs of the tripod by pushing the metal shoe of each leg into the ground, or sandbag each leg.

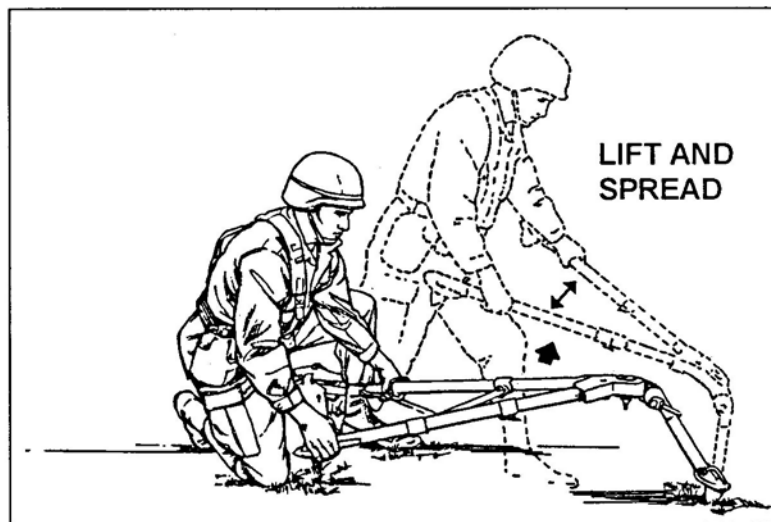


Figure 1. Opening M3 Tripod Into Position

2. Attach the T&E mechanism.
 - a. Lock the T&E mechanism in the center of traversing bar (Figure 2).
 - b. Rotate the elevation handwheel to the middle of the threaded shaft and position the traversing handwheel on the left side.

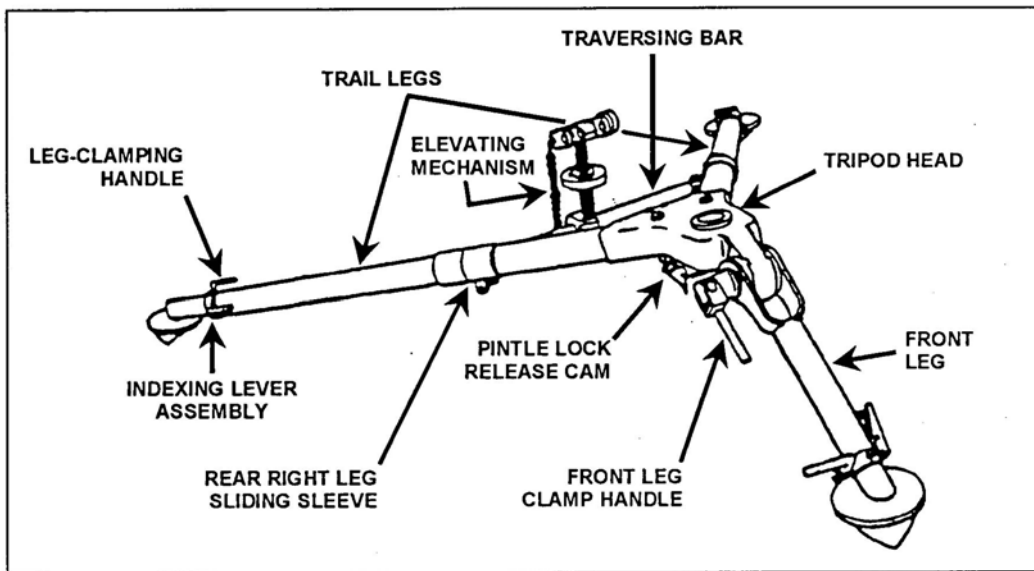
Performance Steps

Figure 2. Attaching the T&E Mechanism

3. Attach MK64 gun mount.
 - a. Lift the pintle lock release cam until it locks open.
 - b. Place the MK64 gun mount pintle into the tripod (Figure 3) until it sits flush on the tripod head. Flip down the pintle lock on the tripod.

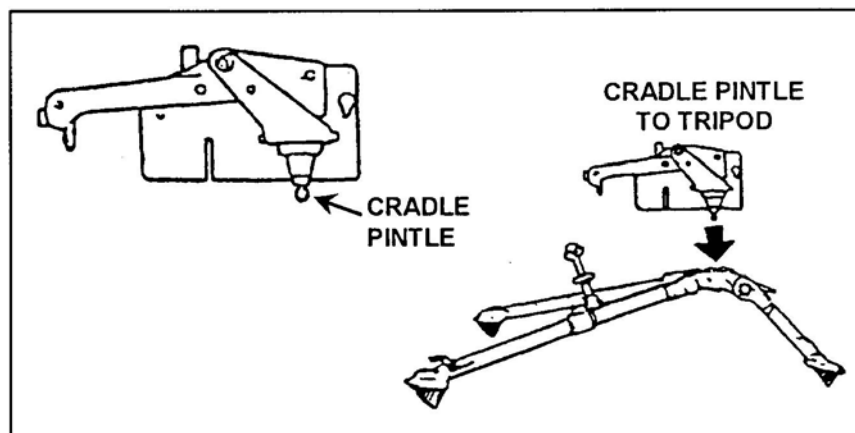


Figure 3. Placing the MK64 Gun Mount Pintle Into the Tripod

- c. Make sure the gun mount is locked into the tripod by lifting slightly on the gun mount.

Performance Steps

- d. Disengage the stow pin (Figure 4) from the gun mount.

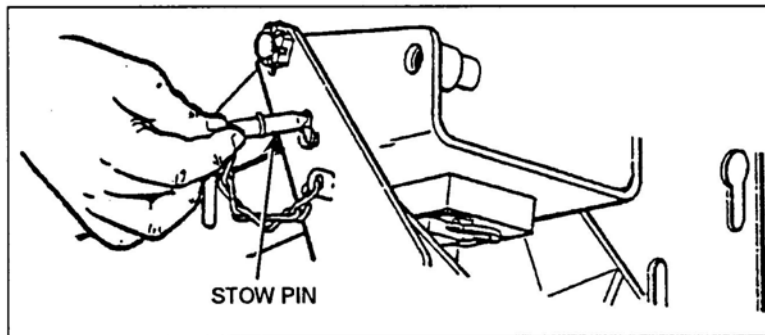


Figure 4. Disengaging the Stow Pin

- e. Remove the quick release pin from the T&E mechanism. Align the holes in the T&E mechanism with the rear holes of the gun mount. Insert the quick release pin from the right side, and rotate the pin downward to the locked position (Figures 5 and 6).

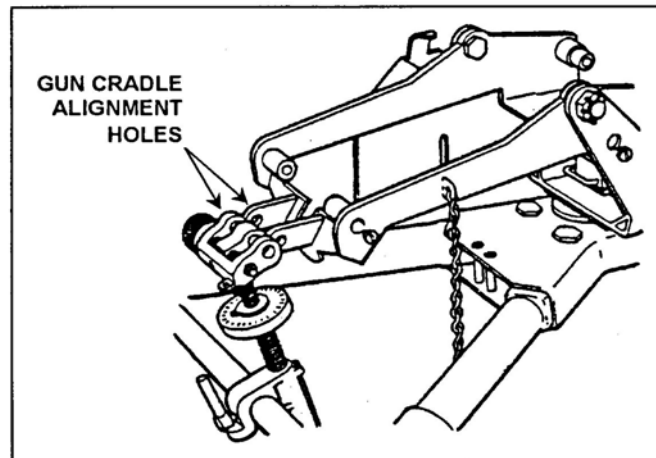


Figure 5. Inserting Quick Release Pin

4. Install the MK19 on the gun mount.

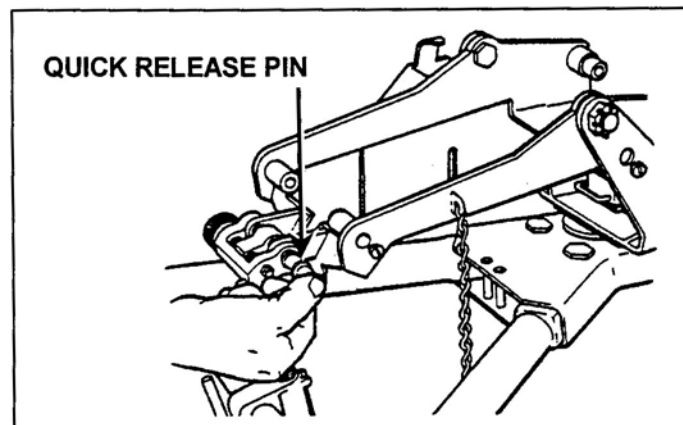


Figure 6. Quick Release Pin Locked Position

Performance Steps

- a. Lower the gun into the mount. Slide the gun's front grooves onto the mounting lugs (Figure 7).

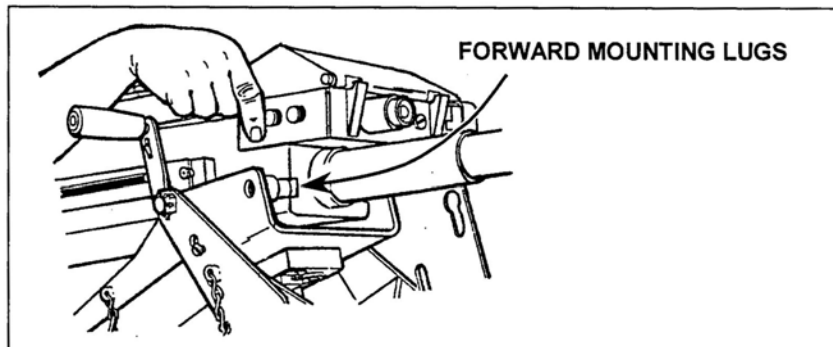


Figure 7. Front Mounting Lug

- b. Align the rear mounting holes of the gun with the rear holes of the gun mount (Figures 8 and 9). Insert the gun mount pin from the right side and rotate it downward to locked position.

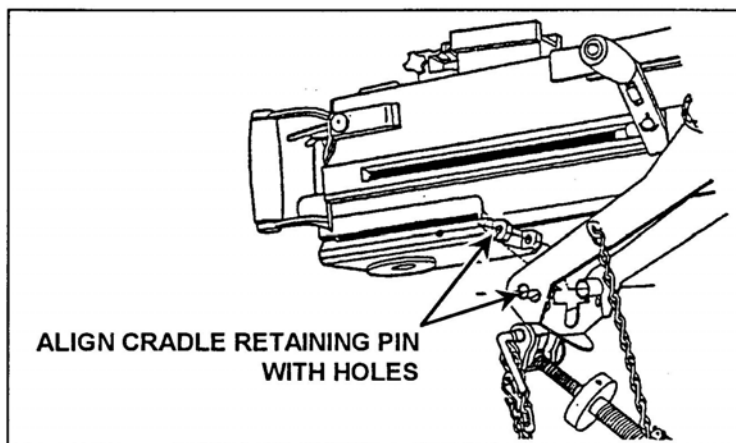


Figure 8. Aligning Rear Cradle Pin Holes

5. Attach the feed throat assembly (Figures 10 and 11).

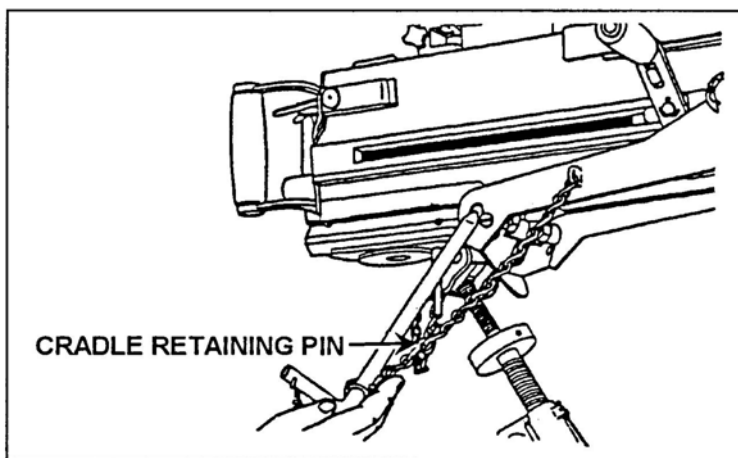


Figure 9. Insert Cradle Pin

Performance Steps

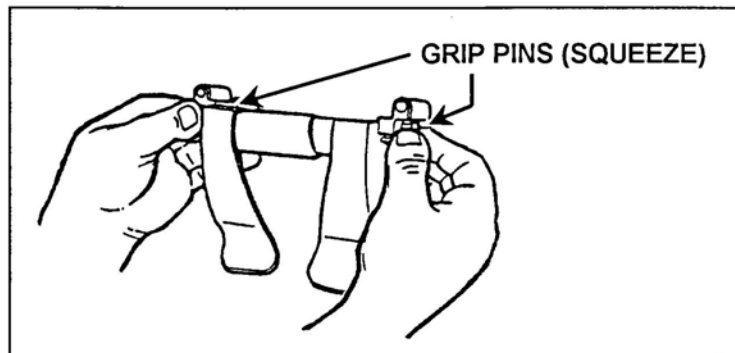


Figure 10. Feeding Assembly

- a. Squeeze the spring-loaded pins on the feed throat assembly.

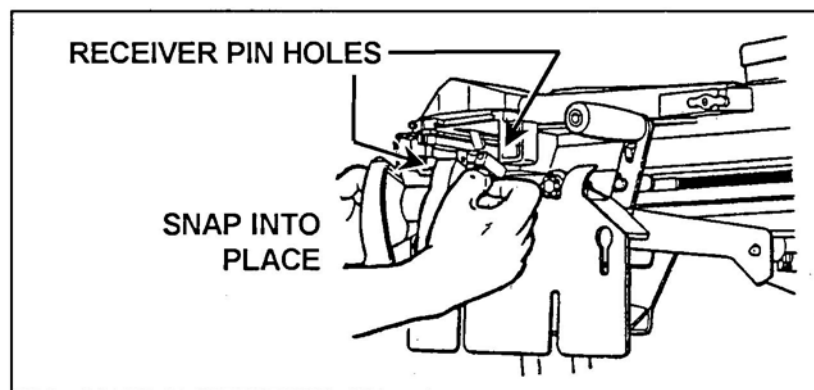


Figure 11. Mounting Feed Throat

- b. Insert the feed throat into the forward left-hand slots of the receiver, and release the feed throat assembly pins.

Evaluation Preparation: Setup: At the test site, provide the Soldier with equipment listed in task's conditions statement.

Brief Soldier: Tell the Soldier to mount the MK19 onto the M3 tripod.

Performance Measures

1. Set up the M3 tripod.
2. Attached the T&E mechanism on the left side.
3. Attached MK64 gun mount.
4. Installed MK19 on gun mount.
5. Attached feed throat assembly.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

Related
FM 23-27
TM 9-1010-230-10

Dismount an MK19 Machine From an M3 Tripod **071-030-0012**

Conditions: Given a cleared MK19 machine gun mounted on an M3 tripod, and an assistant gunner.

Standards: Remove the MK19 from the M3 tripod without damage to equipment or injury to personnel.

Performance Steps

WARNING:

1. A two-man lift is required for the MK19 machine gun and each fully loaded M548 ammunition container. DO NOT try to lift either by yourself.
2. Before performing any procedure, make sure the weapon is clear of all ammunition.
 1. Check to make sure the weapon is clear.
 2. Squeeze the spring-loaded pins on the feed throat assembly, and remove the feed throat assembly.
 3. Remove the gun mount retaining pin.
 4. Lift up and pull the gun rearward until it is free of the mounting lugs. Then, with the help of the assistant gunner, lift the gun from the gun mount.
 5. Remove the traverse and elevation (T&E) mechanism.
 6. Reach under the tripod head (right side) and lift the pintle lock. Remove the gun mount from the tripod.

WARNING: When extending or collapsing the M3 tripod, grasp the feet on the rear legs. The sliding sleeve on the right rear leg can cause injury to personnel.

7. Adjust the tripod legs to their shortest length. Collapse the tripod for carrying or stowing.

Evaluation Preparation: Setup: At the test site, provide the Soldier with the equipment listed in the task conditions statement.

Brief Soldier: Tell the Soldier that he must dismount the MK19 from the M3 tripod.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Check to make sure weapon is clear.	_____	_____
2. Remove feed throat assembly.	_____	_____
3. Remove gun from gun mount.	_____	_____
4. Remove T&E mechanism.	_____	_____
5. Remove the gun mount from the tripod.	_____	_____
6. Prepare the tripod for carrying or stowing.	_____	_____

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References

Required

Related

FM 23-27
TM 9-1010-230-10

Construct a Fighting Position for an MK19 Machine Gun

071-030-0013

Conditions: Given an MK19 machine gun mounted on an M3 tripod, traversing and elevating (T&E) mechanism, pioneer tools (shovel or axe), overhead cover materials (logs and waterproof material), location for position, sector(s) of fire, final protective line (FPL) or principal direction of fire (PDF), and a requirement to construct an MK19 fighting position.

Standards: A fighting position has been constructed for the MK19 machine gun that has the following:

1. L shape design with rear entry.
2. Recessed gun platform that allows traversing across assigned sector of fire.
3. Ammunition storage area.
4. Chest deep and wide enough to move about with combat gear.
5. Flank cover thick enough to stop small arms fire (at least 18 inches of dirt).
6. Overhead cover that consist of logs 4 to 6 inches in diameter, waterproofing material, 4 to 6 inches of dirt, and camouflaged to blend with the terrain.

Performance Steps

1. Position the MK19 so that it is oriented on center of sector of fire, or PDF. Mark the position of the tripod legs and dig a firing platform that is approximately 3 inches in depth.
2. Dig the hole in the shape of an L around the firing platform. Dig the hole chest deep and wide enough to allow the gunner and assistant gunner to load, operate, and place effective fire within assigned sector. If desired, construct the position so that the gunner can fire from the kneeling position by digging down the desired depth directly behind the gun and into the firing platform.
3. Use dirt from the hole to build flank parapets (18 inches thick). Dig out a space for ammunition storage in the center of the left side wall of the L.
4. Slope the rear of the hole so that the position can be entered from the rear.
5. Build overhead cover.
 - a. Put support logs 4 to 6 inches in diameter on top of each other along the entire length of the flank parapets.
 - b. Put logs 4 to 6 inches in diameter side by side across the support logs as the base for the overhead cover.
 - c. Put a water repellent layer, such as a poncho over the base logs.
 - d. Put 6 to 8 inches of dirt on top of the waterproofing material.
 - e. Mold and camouflage the cover to blend with the terrain.
6. Camouflage the position with natural materials (rocks, logs, live bushes, and grass).

Evaluation Preparation: Setup: This task should be evaluated during a unit's field training exercise. At the test site, provide all equipment and materials given in the task condition statement. The location selected should contain all of the characteristics of a good machine gun position.

NOTE: The position's degree of completion depends on the time available. During training, comply with unit standing operating procedure (SOP) and any local regulations concerning the cutting of live vegetation, digging holes, and preventing erosion.

Brief Soldier: Tell the Soldier to position the machine gun to cover the FPL or the PDF, to outline the position on the ground, and to construct the position to meet all requirements.

Performance Measures

1. Positioned the machine gun to lay on the FPL or PDF.

GO **NO GO**

— —

Performance Measures	<u>GO</u>	<u>NO GO</u>
2. Ensured that the secondary sector can also be covered.	_____	_____
3. Outlined the position on the ground.	_____	_____
4. Dug the firing platform.	_____	_____
5. Positioned the machine gun on the firing platform to cover the FPL or PDF.	_____	_____
6. Constructed frontal, flank, and rear cover.	_____	_____
7. Completed construction of the position to the extent required.	_____	_____

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**References
Required**

**Related
FM 23-27**

Lay an M249 Machine Gun Using Field Expedients

071-312-4004

Conditions: As an M249 machine gun gunner in a defensive situation, given a completed fighting position; an M249 machine gun; bipod; primary and secondary sectors of fire that include either an area of graze or recognizable targets; an axe; and tree limbs, rocks or boards.

Standards: In the designated sector of fire with bipod extended, use one of the following:

1. The aiming and elevation stake method to engage preselected targets within the sector.
2. The notched-stake or tree-crotch method to engage preselected target areas within the sector.
3. The log or board method to fire grazing fire.

Performance Steps

1. Fabricate notched stakes or tree crotches if needed (Figure 1).

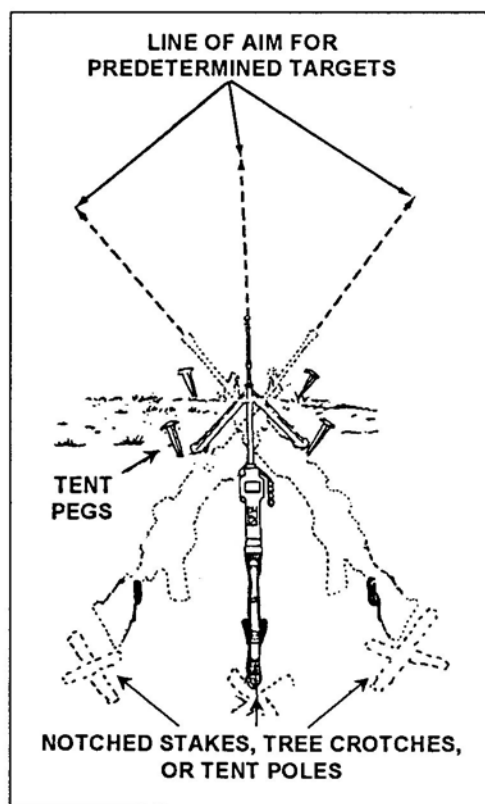


Figure 1. Expedient Sector of Fire Markers

2. Aim the weapon at the preselected target(s).
3. Mark a spot on the ground under the buttstock assembly.
4. Move the weapon aside. Solidly drive a notched stake or tree crotch into the spot marked on the ground.
5. Place the stock of the weapon in the rests notched into the stakes or into the tree crotches. Make final adjustments to hit the desired target area and to define sector limits.

Performance Steps

NOTE: If you do not have any notched stakes or tree crotches, use tent poles or strong sticks. You will need four poles or sticks for the left and right limits, and more for the target areas. Drive two poles or sticks in the ground in the shape of an "X." Place the buttstock in the "X."

6. Drive tent pegs in the ground slightly in front and behind the feet of the bipod legs. This will help you keep the weapon aligned in the sector of fire. Dig shallow trenches or grooves to allow the bipod feet to rotate when you move the stock from one stake or tree crotch to another.

Evaluation Preparation: Setup: Provide equipment and materials listed in the task's condition statement.

NOTE: During training, comply with unit standing operating procedure (SOP) and any local regulations regarding the cutting of live vegetation, the digging of holes, and the prevention of erosion.

Brief Soldier: Tell the Soldier which target(s) to lay the gun on. Point out the sector that the Soldier must cover by fire.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Aim the weapon at preselected targets.	—	—
2. Place the notched stakes or tree crotches to align weapon on preselected targets.	—	—
3. Drive tent pegs in the ground slightly in front and behind the feet of the bipod legs to help keep the weapon aligned on the sector of fire.	—	—
4. Dig shallow trenches or grooves to permit the bipod feet to rotate as the Soldier moves the stock of the weapon from one stake or tree crotch to another.	—	—

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References
Required

Related
FM 23-14

Perform a Function Check on an M249 Machine Gun
071-312-4026

Conditions: Given an M249 machine gun and a requirement to perform a function check.

Standards: Conduct an operational check of the M249 machine gun to make sure it is correctly assembled and functions properly.

Performance Steps

1. Grasp the cocking handle with the right hand, palm facing up, and pull the bolt back, locking it to the rear.
2. Push the cocking handle forward to the lock position.
3. Place the weapon on SAFE.
4. Pull the trigger. (The weapon should not fire.)
5. With the right hand, palm facing up, pull cocking handle to the rear and hold it.
6. Place the weapon on FIRE.
7. Maintain the grasp on the cocking handle, pull the trigger and allow the bolt to ease forward to prevent damage to the bolt.

NOTE: When using dummy rounds, skip step number 5 and do not allow bolt to ease forward.

Evaluation Preparation: Setup: At the test site, provide the equipment listed in the task conditions statement.

Brief Soldier: Tell the Soldier to perform a function check to determine if the M249 machine gun functions properly.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Grasp cocking handle with the right hand, palm up, and pull the bolt back, locking it to the rear.	—	—
2. Push the cocking handle forward to the lock position.	—	—
3. Place weapon on SAFE.	—	—
4. Pull the trigger. The weapon should not fire.	—	—
5. With the right hand, palm up, pull cocking handle to rear and hold it.	—	—
6. Move the safety to fire position.	—	—
7. While continuing to hold the cocking handle to the rear, use your left hand to pull the trigger and ease the bolt forward to prevent damage to the bolt.	—	—

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References
Required

Related
FM 23-14
TM 9-1005-201-10

Correct Malfunctions of an M249 Machine Gun

071-312-4029

Conditions: Given a loaded M249 machine gun and 5.56-mm ammunition linked or loaded in an M16 magazine. The M249 machine gun has been firing and one of the following situations has developed. The weapon fails to fire; the weapon continues to fire after the trigger is released (in which case, the weapon is referred to as “runaway weapon” and the fire is called “uncontrolled fire”); or the weapon fires sluggishly.

Standards: For an M249 that fails to fire, take immediate action within 10 seconds to return the weapon to service without identifying the cause. If immediate action does not work, perform remedial action on either a hot or cold M249 and identify the cause of the malfunction. For an M249 that continues to fire after the trigger is released—that is, a “runaway” M249 firing “uncontrolled fire”—take immediate action to secure the weapon and identify the cause of the malfunction. For an M249 that fires sluggishly, take corrective action.

Performance Steps

1. Take immediate action to correct a failure to fire.
 - a. Grasp the cocking handle (palm up) and pull it to the rear.
 - b. Look at the ejection port to see if a cartridge case, belt link, or round ejects.
 - (1) If nothing ejects—
 - (a) Lock the bolt to the rear.
 - (b) Return the cocking handle forward.
 - (c) Proceed to Step 2 or 3 to take remedial action.
 - (2) If a cartridge, belt link, or round ejects—
 - (a) Return the cocking handle to the forward position.
 - (b) Aim and fire the weapon at the target.
 - (c) If the weapon does not fire, place it in safe mode, and proceed to Step 2 or 3 to take remedial action.
2. Take remedial action on a cold weapon (one that has fired less than 200 rounds in two minutes).
 - a. Ensure the cocking handle is forward and the weapon is in the safe mode.
 - b. Keep the weapon oriented on the target area. Ensure your face is not directly over the feed cover.
 - c. Raise the feed cover.
 - d. If the weapon still does not fire, remove the ammunition belt or magazine.
 - (1) If no rounds are in the chamber—
 - (a) Reload and try to fire at the target. If the weapon fires, the stoppage has been corrected.
 - (b) If the weapon fails to fire, take immediate action (Step 1). If the weapon still fails to fire, continue to the next step.
 - (c) Clear the weapon.
 - (d) Disassemble and inspect the weapon.
 - (e) Clean, lubricate, and replace damaged or missing parts as needed.
 - (2) If a cartridge is in the chamber—
 - (a) Remove all ammunition from the feed tray and close the cover.
 - (b) Try to fire. If the weapon fires, the stoppage has been corrected. Reload and continue the mission.
 - (c) If the weapon does not fire, continue to the next step.
 - (d) Lock the bolt to the rear.
 - (e) With the cover closed, remove the round from the chamber using a cleaning rod.
 - (f) Clear the weapon.
 - (g) Disassemble and inspect the weapon.
 - (h) Clean, lubricate, and replace damaged or missing parts as needed.

Performance Steps

3. Take remedial action on a hot weapon (one that has fired more than 200 rounds in two minutes).
 - a. Ensure the cocking handle is forward and the weapon is in the safe mode.
 - b. Keep the weapon oriented on the target area. Place the safety in the safe mode.

WARNING: During training, wait fifteen minutes before applying remedial action. During combat, wait five seconds before applying remedial action due to the possibility that a “hangfire” or “cookoff” may occur.

- c. Raise the cover.
 - d. Remove the ammunition belt or magazine.
 - e. Raise the feed tray.
 - f. Inspect the chamber.
 - (1) If no round is in the chamber—
 - (a) Reload and try to fire.
 - (b) If the gun fires, the stoppage has been corrected.
 - (c) If the weapon fails to fire, apply immediate action for a second time.
 - (d) If immediate action does not work, continue to the next step.
 - (e) Disassemble and inspect the weapon.
 - (f) Clean, lubricate, and replace damaged or missing parts, as needed.
 - (2) If a round is in the chamber—
 - (a) Close the cover and try to fire.
 - (b) If the weapon fires, the stoppage has been corrected.
 - (c) If the weapon does not fire, ensure the cocking handle is forward and the weapon is in the safe mode.
 - (d) Disassemble and inspect the weapon.
 - (e) Clean, lubricate, and replace damaged or missing parts, as needed.
4. Take immediate action to secure a runaway weapon.
 - a. If after the trigger is released, the weapon continues to fire, take one of the following actions:
 - (1) Hold the weapon on the target until the weapon stops firing.
 - (2) Break the ammunition belt by twisting it in either direction.
 - (3) Allow the weapon to fire the remaining ammunition at the target.
 - b. Clear the weapon.
 - c. Disassemble the weapon and check for the following deficiencies:
 - (1) Broken, worn, or burred sear.
 - (2) Worn sear notch on the piston assembly.
 - (3) Sear stuck in the trigger housing.
 - (4) Carbon buildup in the gas system.
 - d. Clean, lubricate, and replace damaged or missing parts as required.
 - e. Turn weapon in to maintenance before firing again.
5. Correct sluggish operation of the M249 machine gun.
 - a. Clear the weapon.
 - b. Disassemble and inspect the weapon.
 - c. Clean, lubricate, and replace damaged or missing parts as required.

Evaluation Preparation: Setup: At the test site or live-fire range, provide all the equipment given in the task conditions statement. Set up the weapon so that it is loaded and in the safe mode. Insert an expended round in the belt to cause a stoppage. You can evaluate this task using dummy 5.56-mm ammunition either in links or in M16 magazines.

Brief Soldier: Tell the Soldier that he must assume a firing position behind the M249 to apply any required immediate action. Ask the Soldier to describe the actions to perform for remedial action on a cold and hot weapon, a sluggishly operating weapon, and a runaway weapon.

Performance Measures

1. Take immediate action to correct a failure to fire.

GO **NO GO**

Performance Measures

2. Take remedial action on a cold weapon.
3. Take remedial action on a hot weapon.
4. Take immediate action to secure a runaway weapon.
5. Correct sluggish operation of the M249.

GO **NO GO**

_____	_____
_____	_____
_____	_____
_____	_____

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References

Required

Related

FM 23-14

Zero an M249 Machine Gun 071-312-4030

Conditions: Given an M249 machine gun on a live-fire range or on terrain where the M249 can be fired safely, a 300-meter target located 300 meters from the firing position, and a 30-round belt of ammunition.

Standards: Using no more than 30 rounds, adjust the sights on an M249 machine gun so that a correct sight picture causes a fired round to impact the target at the point of aim.

Performance Steps

1. Set sights for initial firing.
 - a. Elevation: Using the elevation knob, index the known range (300 meters) to the target. Center the peep sight by rotating it clockwise (right) as far as it will go, then rotate it counterclockwise (left) 5 clicks (Figures 1 and 2).

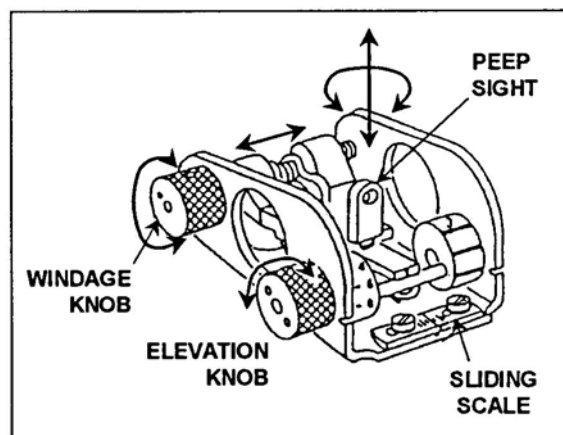


Figure 1. M249 Rear Sight Assembly

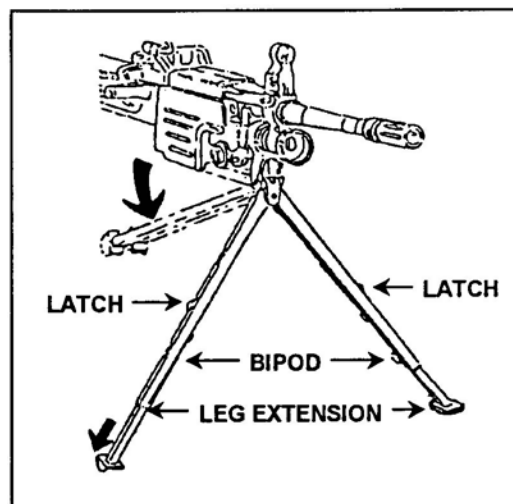


Figure 2. Bipod Assembly

NOTE: The elevation range scale wheel has range settings from 300 to 1,000 meters. The even numbered range settings are on the left side of the scale wheel and the odd numbered range settings are on the right (Figures 1 and 2).

Performance Steps

- b. Windage. Rotate the windage knob toward the muzzle until the peep sight is completely to the right, then rotate the windage knob toward the buttstock 12 clicks to the left. This will place the peep sight in the approximate center of the sight (Figures 1 and 2).
2. Assume a good stable firing position (Figures 3 and 4).

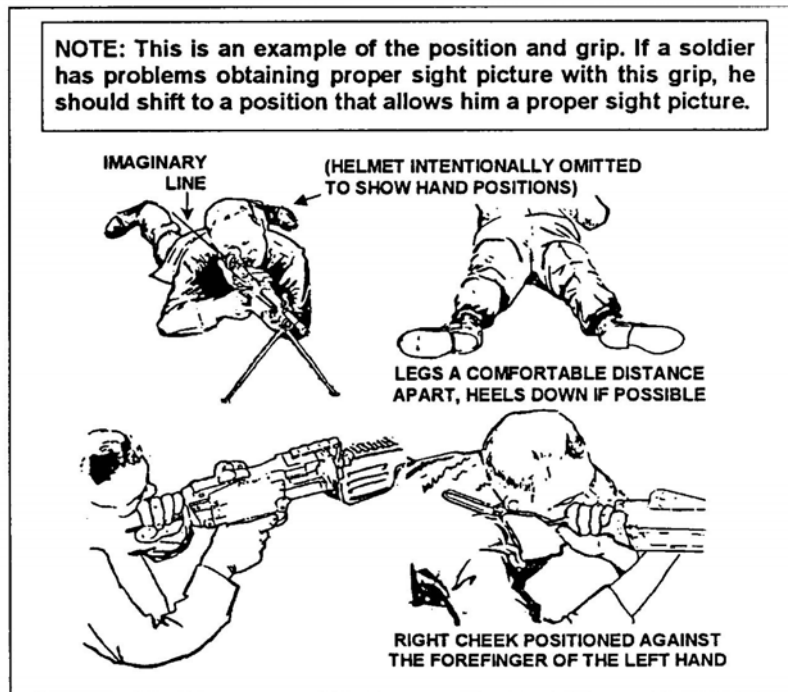


Figure 3. Prone Position, Bipod-Supported



Figure 4. Fighting Position, Bipod-Supported

3. Fire a three-round burst at the center base of the target. Note where the burst strikes.
4. Adjust sights so that rounds impact target area.

Performance Steps

- a. Adjust the sights for deflection. Determine if the center of the beaten zone is left or right of the target. Adjust the windage knob forward to move it to the right, or adjust it rearward to move it to the left (Figure 5).
- b. Adjust the sights for elevation. Determine if the center of the beaten zone is above (high) or below (low) the point of aim. Rotate the peep sight clockwise to lower it, or counterclockwise to raise it (Figure 5).

100 meters	—	One click moves strike	5 cm (2 inches)
200 meters	—	One click moves strike	10 cm (4 inches)
300 meters	—	One click moves strike	15 cm (6 inches)
400 meters	—	One click moves strike	20 cm (8 inches)
500 meters	—	One click moves strike	25 cm (10 inches)
600 meters	—	One click moves strike	30 cm (12 inches)
700 meters	—	One click moves strike	35 cm (14 inches)
800 meters	—	One click moves strike	40 cm (16 inches)
900 meters	—	One click moves strike	45 cm (18 inches)

Figure 5. Windage and Elevation (Peep Sight) Correction Chart

5. Fire a confirming burst. (If you do not hit the target, repeat Steps 3 and 4 until you do so).
6. Adjust the elevation scale to reflect the range to the target.
7. Record the zero. Once you have zeroed the weapon, record the elevation setting.
 - a. Deflection. Do not record the adjustments for windage scale. Instead, loosen the windage sliding scale screws, and align the scale so that the large index line is under the windage mark on the sight. Tighten the screws.
 - b. Elevation. Count the number of clicks (half turns) you have moved the peep sight away from the initial setting. For example, with a 300-meter zero, if you moved the peep sight two clicks (half turns) up, record ZERO 300 UP 2. If you moved the peep sight two clicks (half turns) down, record ZERO 300 DOWN 2.

Evaluation Preparation: Setup: At the test site, provide all equipment and materials in the task conditions statement.

Brief Soldier: Indicate the target and the range to the target. Tell the Soldier he has 30 rounds to zero the M249.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Set the sights for initial firing.	—	—
2. Assume a good stable firing position.	—	—
3. Fire a three-round burst at the center base of the target, and note where the burst strikes.	—	—
4. Adjust the sights so that rounds impact target area..	—	—
5. Fire a confirming burst.	—	—

Performance Measures

GO

NO GO

6. Adjust the elevation scale to reflect the range to the target.

7. Record the zero. Once you complete the zero, record the elevation setting.

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References

Required

Related

FM 23-14

TM 9-1005-201-10

Zero a Caliber .50 M2 Machine Gun
071-313-3452

Conditions: In a combat environment, given a tripod-mounted caliber .50 M2 machine gun, a target between 400 and 1,000 meters from a firing position, a 15-round belt of tracer ammunition, and a requirement to zero a caliber .50 M2 machine gun.

Standards: Zero was obtained firing single rounds, adjusted the windage and elevation as required until a round hit the target.

Performance Steps

- 1. Estimate the range to a target 400 to 700 meters from your position.
- 2. Place the estimated range to the target on the rear leaf sight and align the windage.
- 3. Place machine gun in the single shot mode.
- 4. Align front and rear leaf sights to center base of target using the traverse and elevation mechanism.
- 5. Fire a single round at the target.
- 6. Align front sight and rear leaf sight to the strike of the round.
- 7. Repeat steps 4, 5, and 6 until the strike of the round coincides with the point of aim of the machine gun.

Evaluation Preparation: Setup: On a live-fire range, provide a tripod-mounted caliber .50 M2 machine gun. A target should be available at a range of 400 to 1,000 meters from the firing position for zero. Sufficient ammunition (15 rounds) should be available for confirming the zero.

Brief Soldier: Tell him he will be required to zero the gun using the field zero technique. Point out the target to the Soldier.

Performance Measures	GO	NO GO
1. Determined the range to a target 400 to 1,000 meters from your position. NOTE: Because the range scale on the caliber .50 M2 machine gun is indicated in yards, you may have to convert the meters to the target into yards.	_____	_____
2. Placed the selected target range on the rear leaf sight. a. Raise the rear leaf sight until it snaps into the upright position. b. Adjust the range scale to the selected target range by rotating the elevation screw knob in the necessary direction. (Clockwise moves the scale up; counterclockwise moves it down.)	_____	_____
3. Aligned the windage. Rotate the windage knob until the zero index mark on the base of the rear sight is aligned with the index mark on the top of the receiver. (Clockwise moves the windage scale to the left; counterclockwise moves it to the right.)	_____	_____
4. Placed the machine gun in the single-shot mode.	_____	_____
5. Aligned the front and rear leaf sights to center base of the target using the traversing and elevating mechanism.	_____	_____
6. Fired a single round at the target.	_____	_____
7. Aligned the front and rear leaf sight to the strike of the round.	_____	_____

Performance Measures

GO

NO GO

8. Repeated performance measures 5, 6, and 7 until the strike of the round coincides with the point of aim of the machine gun.

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-65

Set Headspace and Timing on a Caliber .50 M2 Machine Gun 071-313-3455

Conditions: Given a caliber .50 machine gun (tripod or cupola mounted), a headspace and timing gauge, and an assistant gunner.

Standards: Adjusted headspace so that the GO end of the headspace gauge will enter the T-slot and the NO-GO end will not. Set timing for the weapon to fire when recoiling parts are between 0.020 and 0.116 inch out of battery.

Performance Steps

WARNING: Make sure the gun is clear of ammunition before starting.

1. Adjust headspace.
 - a. Raise the cover group all the way up (Figure 1).

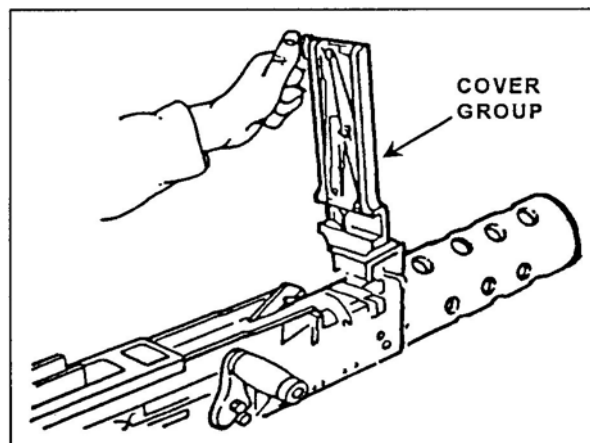


Figure 1. Raise Feed Cover

- b. Grasp the retracting slide handle with your right hand, palm up; pull the bolt to the rear until the barrel locking spring lug aligns with the 3/8-inch hole in the right side plate of the receiver (Figure 2).

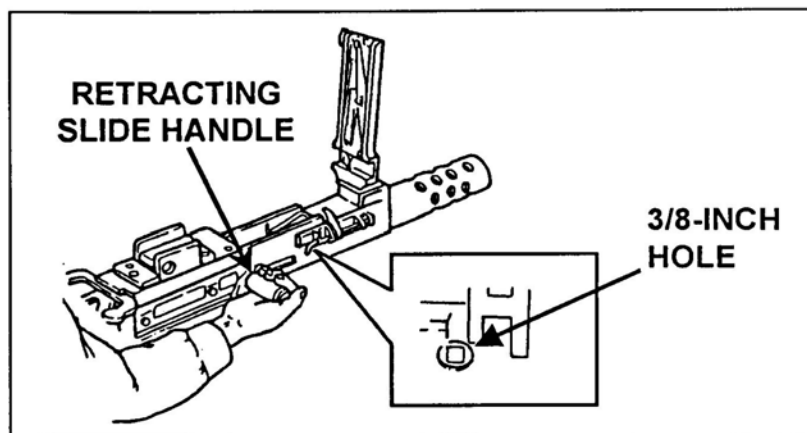


Figure 2. Moving Bolt

Performance Steps

- c. Screw the barrel fully into the barrel extension; then unscrew the barrel two notches (clicks) (Figure 3).

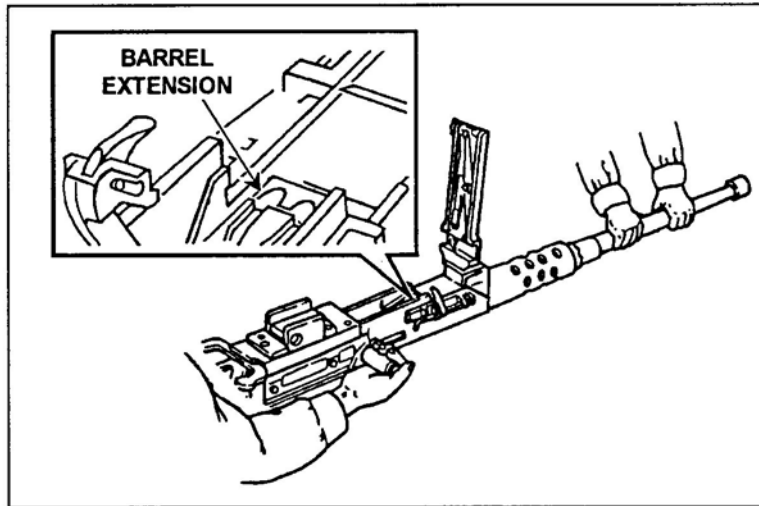


Figure 3. Attaching Barrel

- d. Release the retracting slide handle and allow the bolt to go forward slowly.
- WARNING:** Check the barrel to make sure it is locked in the forward position. Try to turn the barrel in either direction. The barrel should not turn. If it does, stop and notify your supervisor or unit armorer at once. **DO NOT** try to fire the gun.
- e. Ensure the weapon is in single-shot mode. Pull the bolt to the rear and hold it; then press the bolt-latch release, and allow the bolt to go forward slowly. **DO NOT** fire the weapon.
 - f. Pull the retracting slide handle back, until the barrel extension separates (not more than 1/16 of an inch) from the trunnion block. Make sure the GO/NO-GO gauge (Figure 4) has no broken, bent, rusted, or pitted areas, or other defects that could affect the weapon's dimensional tolerances.

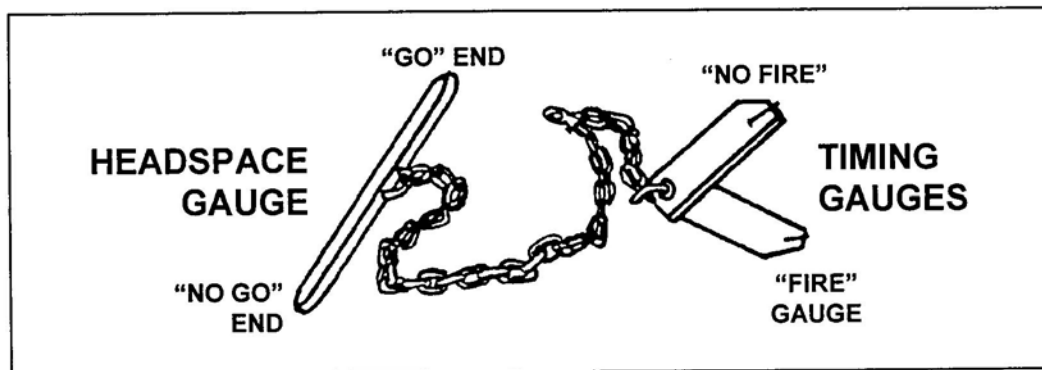


Figure 4. Headspace and Timing Gauge

- g. Raise the cartridge extractor. Try to insert each end of the GO/NO-GO headspace gauge in the T-slot between the face of the bolt and the rear of the barrel (Figure 5).

Performance Steps

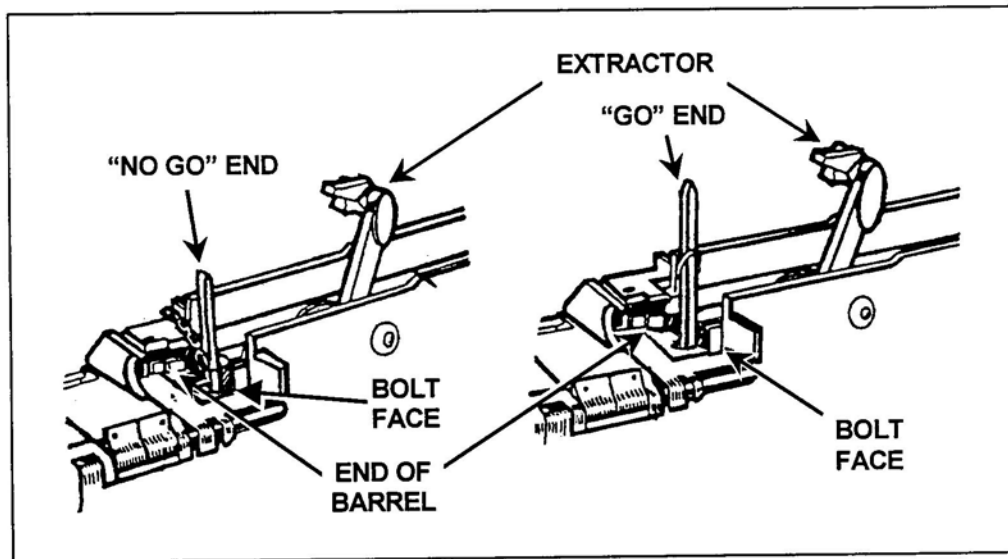


Figure 5. Headspace Setting

- (1) IF the GO end of the gauge enters freely up to the ring on the center of the gauge, and the NO-GO end will not enter, the headspace is set correctly.
- (2) If the GO end of the gauge will not enter T-slot freely, adjust headspace as follows:
 - (a) Retract the bolt so you can see the barrel-locking lug spring in the center of the receiver hole on the right side of the receiver (Figure 2).
 - (b) Unscrew the barrel from the barrel extension one notch (click) at a time, until the GO end of the gauge enters the T-slot freely (check after each click). To complete the adjustment, try to insert the NO-GO end of the gauge. If it will not enter the T-slot, the headspace is set correctly.
- (3) If the NO-GO end of the gauge enters the T-slot, adjust as follows:
 - (a) Retract the bolt so you can see the barrel locking lug spring in center of receiver hole on right side of receiver (Figure 2).
 - (b) Screw the barrel into the barrel extension one notch (click) at a time, until the NO-GO end of the gauge will not enter the T-slot (check after each click). To complete the adjustment, try to insert the GO end of the gauge. If it inserts into the T-slot easily, the headspace is set correctly.

CAUTION: After you have corrected the headspace, recheck the barrel's positive locking action by trying to screw it in or out with the bolt in the forward position. If you can do either, then **DO NOT** fire the machine gun. Notify your supervisor or the unit armorer.

2. Check and adjust timing.

a. Check timing.

- (1) Make sure you have set the headspace correctly.
- (2) Pull the bolt to the rear with the retracting slide to cock the machine gun. While holding the handle to the rear, depress the bolt latch release, and allow the bolt to go forward slowly. **DO NOT** press the trigger.
- (3) Retract the bolt just enough (1/16th inch) to insert the NO-FIRE gauge between the barrel extension and trunnion block, with the beveled edge of the gauge against the notches in the barrel. Release the retracting slide handle slowly (Figure 6).

Performance Steps

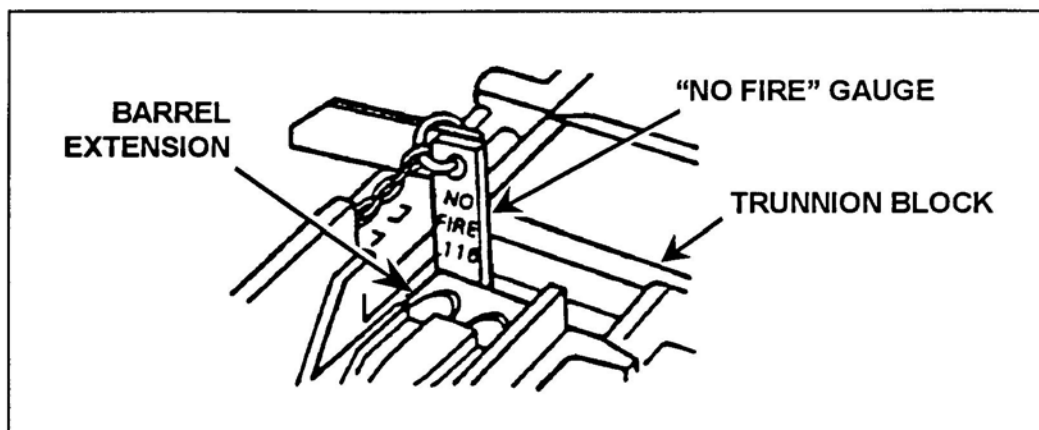


Figure 6. "No Fire" Positioning

- (4) Depress the trigger. The gun should not fire. If it does not, continue the timing check. However, if it does fire, go to Step 2b.
- (5) Grasp the retracting slide handle. Retract the bolt just enough (1/16th inch) to remove the NO-FIRE gauge. Insert the FIRE gauge between the barrel extension and trunnion block, with the beveled edge of the gauge against the notches in the barrel (Figure 7). Release the retracting slide handle slowly.

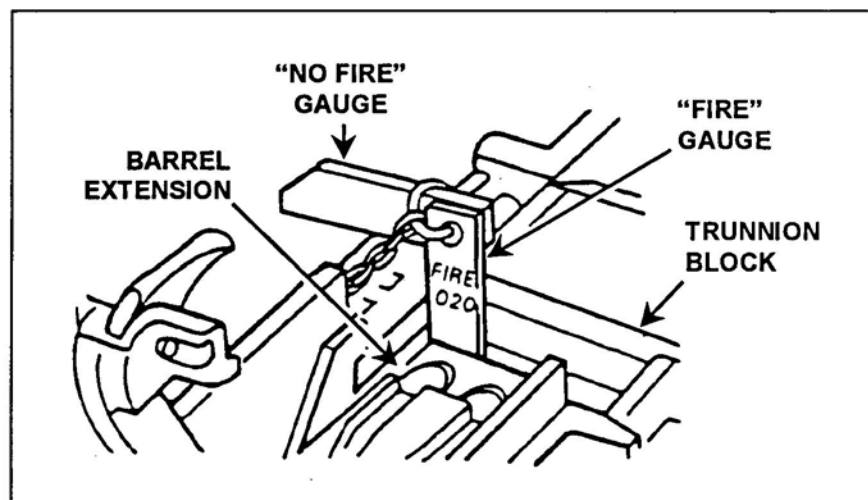


Figure 7. "Fire" Positioning

- (6) Depress the trigger. The gun should fire. If it does not, go to Step 2b.
- b. Adjust timing.
 - (1) Remove the gauge.
 - (2) Pull the bolt to the rear with the retracting slide to cock machine gun. Press the bolt latch release, and allow the bolt to go forward slowly. DO NOT press the trigger.
 - (3) Grasp the retracting slide handle. Retract the bolt just enough to insert the FIRE gauge between the barrel extension and the trunnion block, with the beveled edge of the gauge against the notches in the barrel (Figure 7).

WARNING: DO NOT remove the backplate unless the bolt is in the forward position. Never cock the gun with the backplate off. Stand to one side of the weapon when removing the backplate to avoid possible injury from the driving spring rod.

Performance Steps

- (4) Move to the side of the gun and remove the backplate.
- (5) Screw the timing adjustment nut all the way down (to the left). The nut should turn hard (Figure 8).

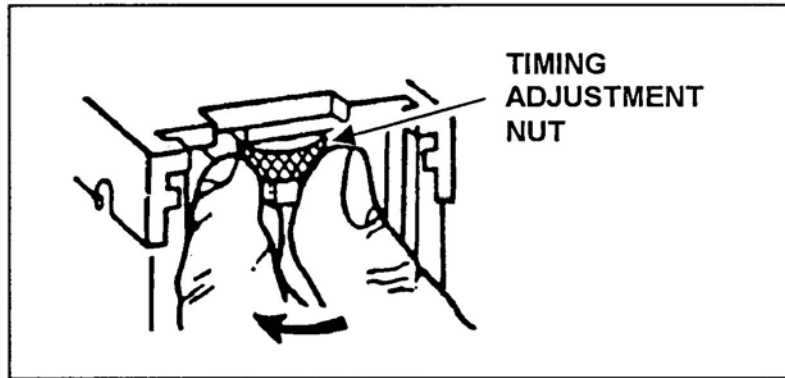


Figure 8. Adjusting Timing

- (6) Try to fire by pushing firmly up on the trigger lever (Figure 9). The gun should not fire.

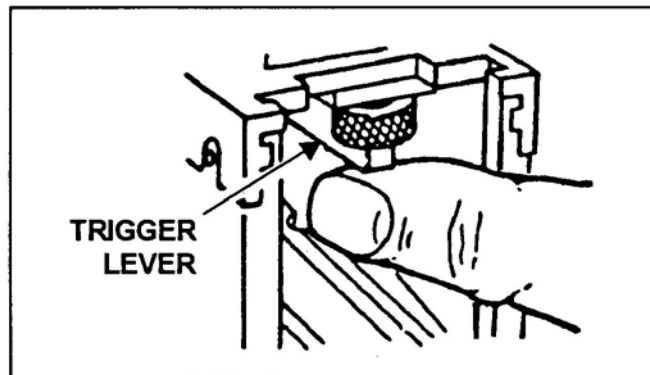


Figure 9. Push Trigger Lever

- (7) Screw the timing adjustment nut up (to the right), one click at a time. Push up firmly on the trigger lever after each click. Repeat until the gun fires.
- (8) Turn the timing adjustment nut up (to the right), two more clicks. DO NOT turn the timing adjustment nut any more.
- (9) Remove the FIRE gauge, and replace the backplate.
- (10) Recheck timing with the FIRE/NO-FIRE gauge twice more to confirm that the adjustment is correct.

Evaluation Preparation: Setup: At the test site, provide the equipment listed in the task's conditions statement. Use the performance steps in the training information outline to evaluate performance of the task.

Brief Soldier: Tell the Soldier to check for and set the correct headspace and timing on the gun.

Performance Measures

- 1. Adjusted headspace.
- 2. Checked and set timing.

GO **NO GO**

STP 31-18B34-SM-TG

Evaluation Guidance: Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

References

Required

Related

FM 23-65

TM 9-1005-213-10

Employ an SG43/SGM Heavy Machine Gun
331-201-2200

Conditions: Given a mounted SG43/SGM heavy machine gun and a belt containing three dummy rounds of 7.62-mm x 54-mm R ammunition.

Standards: 1. Load and fire the weapon.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Press the feed cover catch forward, and swing the cover up.
 - b. Place the belt in the feedway with the rim of the first cartridge between the cartridge grippers.
 - c. Close the cover.
 - d. Pull the operating slide to the rear using the operating handle, and then push the handle forward.
 - e. Lift up the locking lever (safety) with the thumb of one hand.
 - f. Aim.
 - g. Using the other thumb, press forward on the trigger.
 - (1) The bolt remains open between bursts.
 - (2) The bolt remains closed when the last round has been fired.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Wait 5 seconds.
 - (2) Pull the operating slide to the rear.
 - (3) Push the operating handle forward.
 - (4) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating slide to the rear observing the extraction and ejection of the cartridge, then push the operating handle forward.
 - (2) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another belt.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon.
 - a. Pull the operating slide to the rear.
 - b. Open the cover by pressing the cover catch forward.
 - c. Lift the belt from the feed pawls.
 - d. Lift the lower feed cover.
 - e. Remove the cartridge from the cartridge grippers, if necessary.
 - f. Visually inspect the chamber.
 - g. Grasp the operating handle, raise the safety, press the trigger, and ease the operating slide forward.
 - h. Close the cover and lower the rear sight.

Performance Measures

1. Load and fire the weapon correctly.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Employ a DShK M38/46 Machine Gun

331-201-2209

Conditions: Given a DShK M38/46 machine gun mounted on a cradle and tripod and a belt containing three dummy rounds of 12.7-mm x 108-mm ammunition.

- Standards:** 1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Ensure the safety is to the rear (FIRE).
 - b. Insert the belt into the feedway from the left side until the belt holding pawl holds the first round.
 - c. Pull the operating slide fully rewarded until it locks, and then push operating handle forward.
 - d. Aim and fire (the bolt will remain closed when the last round has been fired).
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Wait 5 seconds.
 - (2) Pull the operating slide to the rear.
 - (3) Push the operating handle forward.
 - (4) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating slide to the rear, observing the extraction and ejection of the cartridge.
 - (2) Push the operating handle forward.
 - (3) Place the weapon in the SAFE position.
 - (4) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another magazine.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon.
 - a. Ensure the bolt is to the rear and placed in the SAFE position.
 - b. Press the cover latch, open the cover, and remove the belt.
 - c. Inspect the feeder, chamber, and receiver for cartridge.
 - d. Rotate the safety to the rear (FIRE).
 - e. Holding the operating handle, press the trigger and ease the slide forward, then place in the SAFE position.
 - f. Close all covers.
 - g. Lower the rear sight.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	—	—
2. Reduce a stoppage.	—	—
3. Clear the weapon within 10 seconds.	—	—

STP 31-18B34-SM-TG

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Employ an MG3 Machine Gun
331-201-2210

Conditions: Given an MG3 machine gun and a belt containing three dummy rounds of 7.62-mm x 51-mm ammunition.

- Standards:** 1. Load and fire the weapon.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Pull the operating handle to the rear, and then push it forward.
 - b. Press the safety to the left (SAFE), and open the cover.
 - c. Place the first round of the belt in the feed tray groove, with the links on top and the cartridge against the stop, and close the cover.
 - d. Push the safety to the right (FIRE).
 - e. Aim and fire.
2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Wait 5 seconds.
 - (2) Pull the operating handle to the rear.
 - (3) Push the operating handle forward.
 - (4) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating handle to the rear, observing the extraction and ejection of the cartridge, and then push the operating handle forward.
 - (2) Place the weapon in the SAFE position.
 - (3) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another belt.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.
3. Clear the weapon.
 - a. Pull the operating handle to the rear, if necessary, and place in the SAFE position.
 - b. Press the catch, open the cover, and remove any ammunition or belt links that may remain in the gun.
 - c. Lift the feed tray, inspect the chamber, and close the cover.
 - d. Press the safety to the right (FIRE) position.
 - e. Hold the operating handle, pull the trigger, and ease the bolt forward.
 - f. Close the ejection port cover under the receiver.
 - g. Fold down the front and rear sights.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Load and fire the weapon correctly.	_____	_____
2. Reduce a stoppage.	_____	_____
3. Clear the weapon within 10 seconds.	_____	_____

STP 31-18B34-SM-TG

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Employ a PK Machine Gun

331-201-2212

Conditions: Given a PK machine gun and a belt containing three dummy rounds of 7.62-mm x 54-mm R ammunition.

- Standards:** 1. Load and fire the weapon.
 2. Reduce a stoppage.
 3. Clear the weapon within 10 seconds.

Performance Steps

1. Load and fire the weapon.
 - a. Press the cover catch forward, and lift the cover.
 - b. Ensure the bolt is forward on the feed tray.
 - c. Place the rim of the first cartridge of the belt in the cartridge gripper.
 - d. Close the feed cover.
 - e. Ensure the weapon is in the FIRE position.
 - f. Pull the operating handle to the rear, locking the bolt to the rear, and then push the operating handle forward.

CAUTION: Weapon is now ready to fire!

- g. Aim, press the trigger, and fire.

2. Reduce a stoppage.
 - a. Immediate action.
 - (1) Wait 5 seconds.
 - (2) Pull the operating slide to the rear, and push the operating handle forward.
 - (3) Aim and attempt to fire.
 - b. Remedial action.
 - (1) Pull the operating slide to the rear, observing the extraction and ejection of the cartridge.
 - (2) Push the operating handle forward.
 - (3) Place the weapon in the SAFE position.
 - (4) Pick up and inspect the primer of the ejected cartridge.
 - (a) If the primer of the cartridge has been struck, the ammunition is probably at fault. Try another belt.
 - (b) If the primer of the cartridge has not been struck, the weapon is probably at fault. Clear the weapon and inspect it for serviceability.

3. Clear the weapon.
 - a. Ensure the bolt is to the rear, and place the weapon in the SAFE position.
 - b. Press the cover catch, and open the cover.
 - c. Lift the belt out of the feed tray.
 - d. Remove the single cartridge from the cartridge gripper, if necessary.

NOTE: It may be necessary to swing the feed tray up and lift this cartridge out of the cartridge gripper in the feed tray.

- e. Inspect the chamber.
- f. Take the weapon off the SAFE position, grasp the operating handle, press the trigger, and ease the operating slide forward.
- g. Close the cover.
- h. Rotate the safety to the rear (SAFE position).

Performance Measures

1. Load and fire the weapon correctly.
2. Reduce a stoppage.
3. Clear the weapon within 10 seconds.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Maintain an SG43/SGM Heavy Machine Gun

331-201-2217

Conditions: Given an SG43/SGM heavy machine gun.

Standards: 1. Disassemble the weapon within 3 minutes.
2. Reassemble the weapon within 5 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear, the bolt is forward, and the rear sight is raised before starting the disassembly; leave the feed covers open.

1. Disassemble the weapon.
 - a. Remove the backplate and the recoil spring.
 - (1) Depress the detent in the latch on the top center of the backplate, and slide the latch to the rear.
 - (2) Rotate the backplate to the right until it can be removed.
 - (3) Pull out the recoil spring.
 - CAUTION:** Use extreme caution when working with the recoil spring because of danger to personnel.
 - b. Slide the sear housing out of the rear of the receiver.
 - c. Remove the bolt and slide.
 - (1) Pull the operating handle rearward (this moves the bolt and slide to the rear of the receiver).
 - (2) Pull the slide out the rear of the receiver.
 - (3) Lift the bolt off the slide.
 - d. Pull the belt feed slide to the right, out of the receiver.
 - e. Remove the cartridge gripper by sliding it to the rear until it aligns with the dismounting cuts in the lower feed cover.
 - f. Remove the barrel.
 - (1) Depress the barrel lock catch, and pull the barrel lock to the left as far as it will go.
 - (2) Pull the barrel from the receiver.
2. Reassemble the weapon.
 - a. Replace the barrel.
 - (1) Slide the barrel into the receiver, aligning the notch on the barrel with the slide on the receiver.
 - (2) Slide the barrel lock to the right, ensuring the barrel lock latch engages into the recess.
 - b. Replace the cartridge gripper in the lower feed cover, with the gripper lug down and to the rear.
 - c. Raise the lower feed tray to the vertical position.
 - d. Place the belt feed slide into the receiver and push it in as far to the left as possible.
 - e. Replace the bolt and slide.
 - (1) Replace the operating handle, and push it all the way forward.
 - (2) Lay the bolt over the hammer cam on the slide, and move the bolt as far forward as possible.
 - (3) Ensure the ejector is forward.
 - (4) Insert the slide into the receiver.
 - f. Slide the sear housing (sear to the front) into the receiver.
 - g. Replace the backplate and the recoil spring.
 - (1) Insert the recoil spring into the rear of the operating slide.
 - (2) Insert the recoil spring guide on the backplate into the other end of the recoil spring.
 - (3) With the backplate at a right angle to the receiver, insert the backplate lugs into the receiver and rotate the backplate counterclockwise until it stops.
 - h. Slide the lock on the top center of the backplate forward.
 - i. Close all covers.

Performance Steps

3. Perform a function check.
 - a. Pull the operating slide to the rear until the bolt locks (do not depress the thumb safety).
 - b. Depress the trigger (the bolt should not go forward).
 - c. Depress the thumb safety.
 - d. Hold the operating handle, press the trigger, and allow the bolt to go forward under your control.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 3 minutes.	_____	_____
2. Reassemble the weapon within 5 minutes.	_____	_____
3. Perform, in the proper sequence, a function check.	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Maintain a DShK M38/46 Machine Gun
331-201-2226

Conditions: Given a DShK M38/46 machine gun.

Standards: 1. Disassemble the weapon within 3 minutes.
 2. Reassemble the weapon within 5 minutes.
 3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear before starting the disassembly

1. Disassemble the weapon.
 - a. Ensure the weapon is clear, the rear sights raised, the weapon off the SAFE position, and the feed cover open.
 - b. Press out the backplate retaining pin at the rear of the receiver.
 - c. Drive the backplate downward until it separates from the receiver.
 - d. Pull the sear assembly to the rear, and remove it.
 - e. Hold the knurled gas piston tube under the barrel, and force it forward as far as possible.
 - f. Turn the knurled gas piston to disengage it from the barrel.
 - g. Pull the operating slide assembly stud rearward, and remove the gas piston, bolt, operating slide, and gas piston tube.
 - h. Lift the bolt off the operating slide, and remove the firing pin and locking flaps.
 - i. Remove the barrel.
 - (1) Unscrew the barrel nut at the left front of the receiver.
 - (2) Push out the barrel lock to the right.
 - (3) Pull the barrel forward out of the receiver.
2. Reassemble the weapon.
 - a. Replace the barrel.
 - (1) Place the barrel into the receiver.
 - (2) Replace the barrel lock from the right side.
 - (3) Replace and tighten the barrel nut on the left front of the receiver. (Ensure the nut is tight.)
 - b. Replace the firing pin into the bolt.
 - c. Replace the locking flaps onto the bolt.
 - d. Place the assembled bolt on the operating slide.
 - e. Push the bolt assembly forward on the slide until the locking flaps lie flush against the bolt.
 - f. Insert the entire unit into the receiver.
 - g. Pull the gas piston tube forward and turn it to reengage it with the barrel.
 - h. Slide the sear assembly into the receiver.
 - i. Slide the backplate up on the receiver.
 - j. Install the backplate retaining pin at the rear of the receiver.

NOTE: Check the receiver to ensure the feed operating lever is pushed forward before closing the feeder.

 - k. Close the feed cover and lower the rear sight.
3. Perform a function check.
 - a. Pull the operating handle to the rear until the slide locks.
 - b. Rotate the safety forward (SAFE position).
 - c. Depress the trigger (the bolt should not go forward).
 - d. Rotate the safety rearward (FIRE position).
 - e. Hold the operating handle, depress the trigger, and allow the slide to go forward under your control.

Performance Measures

1. Disassemble the weapon within 3 minutes.
2. Reassemble the weapon within 5 minutes.
3. Perform, in the proper sequence, a function check.

GO **NO GO**

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References

Required

Related

ISBN 0710619251

Maintain an MG3 Machine Gun
331-201-2227

Conditions: Given an MG3 machine gun.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 4 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

NOTE: Ensure the weapon is clear and the bolt is forward before the disassembly (DO NOT close top cover).

1. Disassemble the weapon.
 - a. Ensure the weapon is clear and the bolt is forward.
 - b. Remove the buttstock by pressing the buttstock catch and rotating the buttstock one-quarter turn left or right.
 - c. Remove the buffer assembly and the recoil spring.
 - (1) Press up on the rear of the buffer assembly catch and rotate it one-quarter turn counterclockwise.
 - (2) Separate the recoil spring from the buffer.
 - d. Remove the bolt.
 - (1) With a hand over the opening at the rear of the receiver, give the operating handle a sharp jerk rearward and then push it forward (moving the bolt to the rear of the receiver).
 - (2) Pull the bolt out of the receiver.
 - e. Remove the recoil booster assembly.
 - (1) Lift the recoil booster latch.
 - (2) Unscrew the recoil booster assembly, and remove it.
 - f. Remove the barrel.
 - (1) Push the barrel cover lock forward until the barrel cover swings out.
 - (2) Pull the barrel to the rear.
 - g. Remove the barrel mouth by lifting the recoil booster latch and pull it out of the barrel jacket.
 - h. Remove the feed cover and feed tray.
 - (1) Open the feed cover and feed tray to the vertical position.
 - (2) Remove the feed cover and feed tray retaining pin from right to left.
 - (3) Lift off the feed cover and feed tray.
 - i. Remove the trigger group.
 - (1) Close the dust cover.
 - (2) Remove the cotter pin.
 - (3) Remove the trigger group retaining pin.
 - (4) Remove the trigger group by pulling slightly to the rear and removing.
 - j. Remove the operating handle by pulling it all the way to the rear, rotate it down, and then remove it.
 - k. Disassemble the bolt.
 - (1) Pull the locking rollers to the outside of the bolt head.
 - (2) Twist the bolt body counterclockwise one-quarter turn until it is free of the bolt head.
 - (3) Remove the ejector actuator, the internal spring and plunger, the locking cam, the firing pin, and the ejector from the disassembled bolt.
2. Reassemble the weapon.
 - a. Reassemble the bolt.
 - (1) Insert the flat end of the firing pin into the locking cam.
 - (2) Place the locking cam into the bolt head with the flat side of the locking cam toward the top of the bolt.
 - (3) Slip the ejector into the bolt head.
 - (4) Place the internal spring and plunger and the ejector actuator back into the bolt body.

Performance Steps

- (5) Insert the bolt body into the rear of the bolt head, and rotate it one-quarter turn clockwise, ensuring that the ejector actuator is directly behind the ejector.
- b. Replace the operating handle.
 - (1) Insert the front end of the operating handle into the slot on the right rear side of the receiver.
 - (2) Push forward until the rear of the operating handle engages its stop, and then rotate and push the operating handle all the way forward.
- c. Replace the trigger group by inserting the front of the trigger group into the receiver, aligning the holes in the trigger group and the receiver, and inserting the trigger group retaining pin and cotter pin.
- d. Replace the feed tray and feed cover.
 - (1) Replace the feed tray and feed cover onto the receiver.
 - (2) Hold in the vertical position; replace the feed cover and feed tray retaining pin from left to right with the flat side of the retaining pin facing down.
- e. Replace the barrel mouth by lifting the recoil booster latch and inserting the barrel mouth into the barrel jacket with the cutaway portion facing to the right and rear, ensuring free movement through the front of the jacket.
- f. Replace the barrel, and close the barrel cover lock.

NOTE: Ensure that the lock is secured to the receiver.

- g. Replace the recoil booster assembly.
 - (1) Lift the recoil booster latch.
 - (2) Screw the recoil booster onto the front of the barrel jacket.
- h. Replace the bolt.
 - (1) Insert the assembled bolt into the receiver, ejector up, ensuring the rollers are in.
 - (2) Pull the trigger and push the bolt as far forward as possible.
- i. Replace the buffer assembly and the recoil spring.
 - (1) Place the recoil spring onto the buffer.
 - (2) Place the recoil spring in the receiver, and push the buffer all the way forward, ensuring that the buffer catch notch is to the right.
 - (3) Lift up on the rear of the buffer catch, and rotate the buffer one-quarter turn clockwise and ensure that it is locked.
- j. Replace the buttstock.
 - (1) Hold the buttstock twisted to 45 degrees.
 - (2) Press the buttstock catch, rotate the buttstock one-quarter turn left or right until it is locked in the vertical position.
- k. Close the cover.

NOTE: The cover can be closed with the bolt in the forward position.

3. Perform a function check.
 - a. Pull the bolt to the rear using the operating handle.
 - b. Push the safety to the SAFE position (left).
 - c. Depress the trigger (the bolt should not go forward).
 - d. Push the safety to the FIRE position (right).
 - e. While holding the operating handle, depress the trigger and ease the bolt forward slowly.
 - f. Maintain pressure on the trigger and pull the bolt to the rear, then ease the operating handle forward (the bolt should not stay to the rear).

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Disassemble the weapon within 2 minutes.	—	—
2. Reassemble the weapon within 4 minutes.	—	—
3. Perform, in the proper sequence, a function check.	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References
Required

Related
ISBN 0710619251

Maintain a PK Machine Gun
331-201-2229

Conditions: Given a PK machine gun.

Standards: 1. Disassemble the weapon within 2 minutes.
2. Reassemble the weapon within 4 minutes.
3. Perform, in the proper sequence, a function check.

Performance Steps

1. Disassemble the weapon.
 - a. Clear the weapon. DO NOT set on SAFE or close the cover.
 - b. Remove the recoil spring.
 - (1) Press in the recoil spring guide at the rear of the receiver.
 - (2) Ease the recoil spring guide and the recoil spring up and out of the weapon.
 - c. Remove the bolt and the bolt carrier.
 - (1) Grasp the bolt carrier by the cartridge grippers.
 - (2) Pull the entire unit to the rear and then up, until it comes free of the receiver.
 - (3) Lift the bolt and the bolt carrier up and out of the gun.
 - d. Separate the bolt and the bolt carrier.
 - (1) Push the bolt rearward in the bolt carrier while rotating it clockwise to free the bolt cam lug from the bolt cam recess.
 - (2) Pull the bolt forward in the bolt carrier while twisting the bolt free of the cam.
 - (3) Lift the bolt out of the bolt carrier.
 - e. Lift the firing pin from its recess, and remove it.
 - f. Remove the barrel.
 - (1) Slide the barrel lock out to the side.
 - (2) Pull the barrel carrying handle away from the barrel to unseat the barrel from the receiver.
 - (3) Pull the barrel forward, off the weapon.
2. Reassemble the weapon.
 - a. Insert the barrel.
 - b. Slide the barrel lock into position.
 - c. Reassemble and replace the bolt and the bolt carrier.
 - (1) Seat the firing pin in its recess in the bolt.
 - (2) Seat the bolt into its hole in the bolt carrier, twisting as necessary to align the bolt cam lug with its cam lug recess.
 - (3) Start the bolt carrier into the gas cylinder tube.
 - (4) Push the bolt forward.
 - (5) Seat the bolt carrier in the receiver.
 - (6) Pull the trigger.
 - (7) Push the bolt carrier forward.
 - d. Replace the recoil spring.
 - (1) Insert the recoil spring and recoil spring guide into its tunnel in the bolt carrier.
 - (2) Press the recoil spring guide forward against the spring pressure until it seats against the rear wall of the receiver.
 - e. Close the cover.
3. Perform a function check.
 - a. Safety check.
 - (1) Pull the operating slide to the rear, then push the operating handle forward.
 - (2) Swing the safety to the rear (SAFE).
 - (3) Press the trigger (the bolt should not go forward).
 - b. Fire check.
 - (1) Swing the safety forward (FIRE).

Performance Steps

- (2) Pull the operating slide to the rear and hold it.
- (3) Depress the trigger while holding the operating handle, and slide the bolt forward slowly.
- (4) Maintain pressure on the trigger, pull the operating slide to the rear, and then ease the operating handle forward (the bolt should not stay to the rear).

Performance Measures**GO** **NO GO**

- 1. Disassemble the weapon within 2 minutes.
- 2. Reassemble the weapon within 4 minutes.
- 3. Perform, in the proper sequence, a function check.

_____	_____
_____	_____
_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

ISBN 0710619251

Subject Area 17: GRENADE LAUNCHER

Perform a Function Check on an M203 Grenade Launcher
071-311-2126

Conditions: Given an M203 grenade launcher.

Standards: Perform a check to determine if the M203 grenade launcher is functioning properly.

Performance Steps

WARNING: Ensure weapon is unloaded.

1. Check to ensure weapon is clear.
2. Check operation of sear.
 - a. Cock the launcher and squeeze the trigger; the firing pin should release.
 - b. Hold the trigger to the rear and cock the launcher.
 - c. Release the trigger and then squeeze the trigger; the firing pin should release.
3. Check safety.
 - a. Cock the launcher.
 - b. Place the safety on SAFE and pull the trigger; the firing pin should not release.
 - c. Place the safety on FIRE and pull the trigger; the firing pin should release.
4. Move the barrel forward and back and check to ensure the stop and barrel latch function correctly.
5. Turn in the weapon to the unit armorer if it does not function correctly.

Evaluation Preparation: Setup: Provide the equipment in the conditions statement.

Brief Soldier: Tell the Soldier to perform a function check on the M203 grenade launcher. Inform the Soldier that he must notify the evaluator if the M203 does not function correctly.

Performance Measures	<u>GO</u>	<u>NO GO</u>
1. Check operation of sear.	_____	_____
2. Check safety.	_____	_____
3. Check the barrel stop and barrel latch.	_____	_____
4. Turn in malfunctioning weapon to the unit armorer.	_____	_____

Evaluation Guidance: If the Soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

References

Required

Related

TM 9-1010-221-10

Engage Targets with an RPG-7

331-201-2110

Conditions: Given an RPG-7, a PGO-7V telescope sight with illuminating reticle, three rounds of ammunition, and three targets at different ranges of between 100 to 500 meters.

Standards: Inspect rounds for serviceability, prepare rounds for firing, load the round, assume a firing position and engage each of the three targets within 5 minutes; hit a minimum of two targets. Correctly apply misfire procedures if the round fails to fire.

Performance Steps

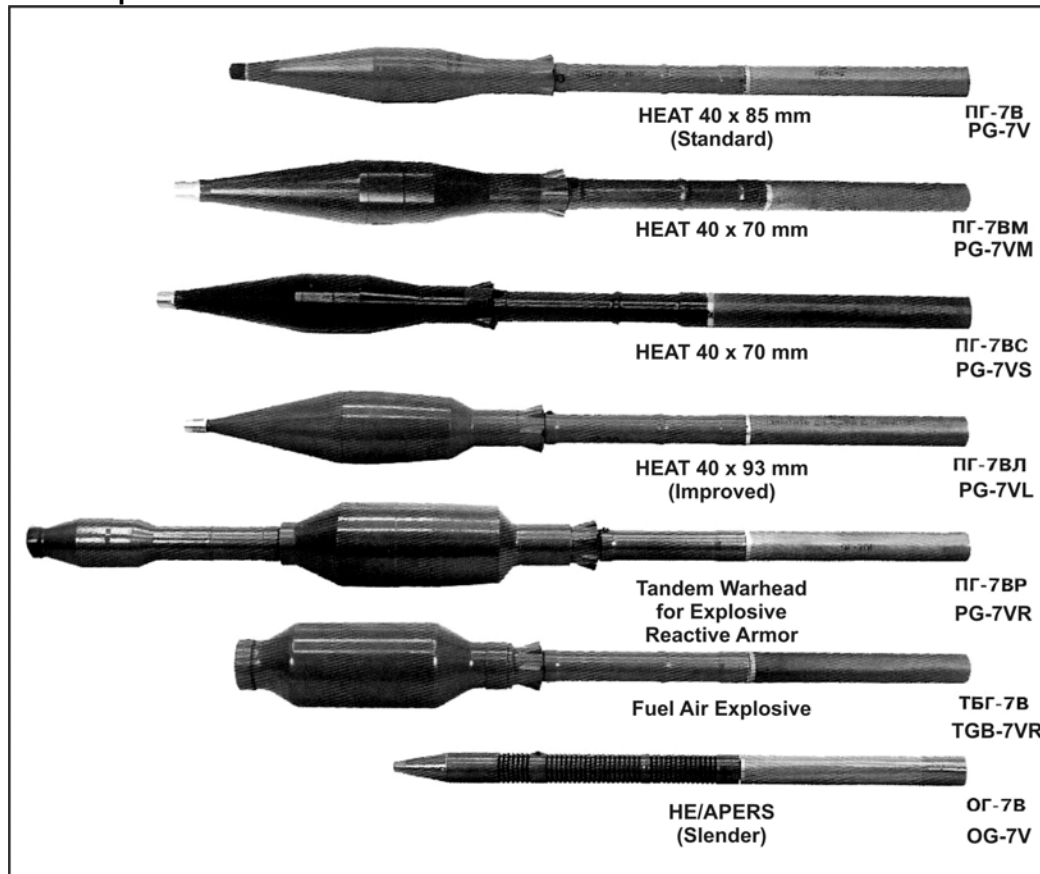


Figure 1. RPG-7 Rounds

WARNING: RPG-2 rounds are not designed for the RPG-7 and must not be fired through the RPG-7 launcher. Serious injury or death could result from trying to fire non-RPG-7 rounds through the RPG-7 launcher. Figure 1 shows RPG-7 rounds.

1. Identify defective rounds.
 - a. If dented, the round is unserviceable.
 - b. Sustainer motor should be corrosion free.
2. Inspect the propellant for serviceability.
 - a. Dented propellant is serviceable unless the cardboard is cut or broken.
 - b. Propellant charge should be cleaned if dirty or corroded.
 - c. Prepare the round for firing by tightly screwing the propellant booster charge to the round. DO NOT overtighten and rip the cardboard.

Performance Steps

NOTE: The booster will not screw on completely flush because of the spring washer on the base of the threads of the sustainer motor.

3. Load the launcher.

WARNING: Ensure the hammer is NOT cocked. A worn sear or hammer could cause the weapon to fire if the round is loaded with the hammer cocked. The safety blocks the trigger and not the sear.

- a. Slide the rocket into the bore.
 - b. Align the metal stud on the rocket with the notch on the muzzle.
4. Select and assume the correct firing position.
 - a. Firing positions are determined by the amount of cover available.
 - (1) The standing position should be used when trees, buildings, or other tall objects are available for cover. The standing position is less stable than the kneeling position.
 - (2) The kneeling position is used when low cover, such as shrubbery or low walls, is available. This position is less stable than the prone position.
 - (3) The prone position is used when very low cover, such as rocks or ridges of earth, is available. Although the prone position is the most stable position, the backblast may pick up more leaves, twigs, pebbles, or other debris than in other positions.
 5. Remove the safety pin.
 6. Remove the cap.
 7. Determine the range to the target. Range can be determined using a laser range finder or off of a range card. Use of the PGO-7V telescope sight with illuminating reticle is least accurate. Reading the range of the telescope sight is performed as follows:
 - a. Place the range stadia line on the target so that the target is between the horizontal line and the curved broken line.
 - b. Read the range to the target over the point where the top of the target touches the curved line on the bottom right hand of the telescope (Figure 2).

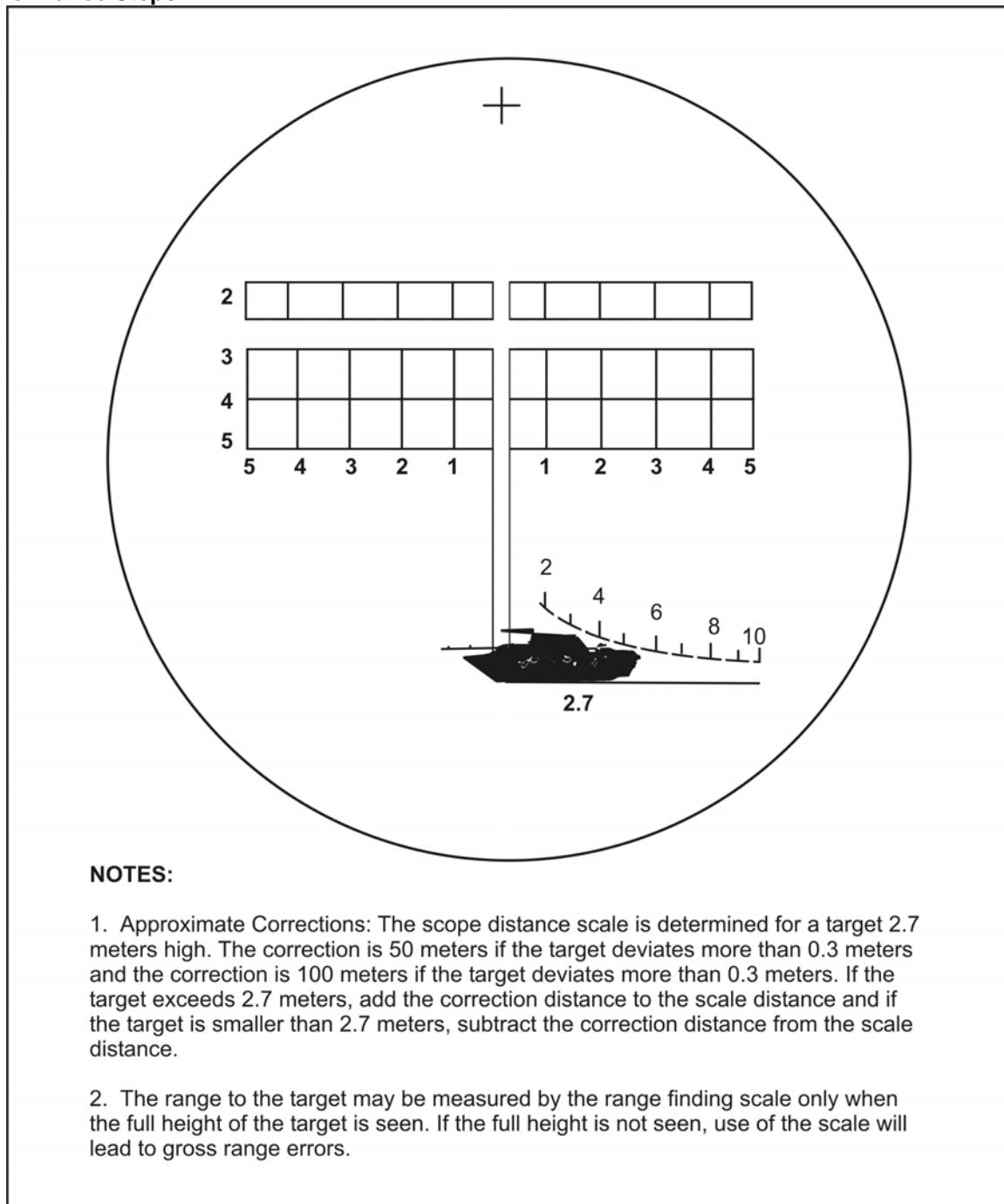
Performance Steps

Figure 2. Target Range

8. Obtain the correct sight picture.
 - a. Sight picture with stationary target (no wind) (Figure 3).

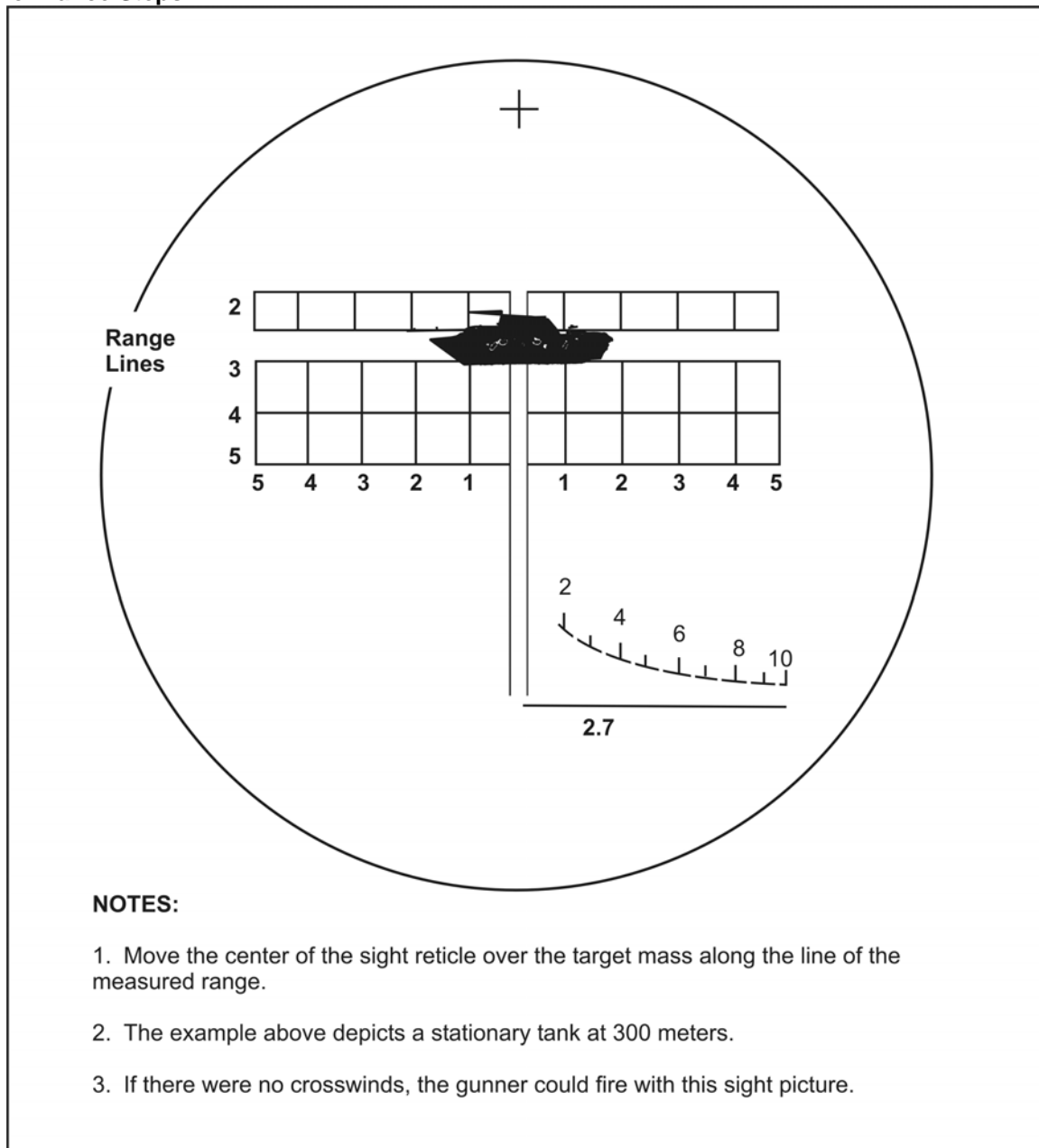
Performance Steps

Figure 3. Sight Picture With Stationary Target No Wind

- (1) Determine range to the target.
 - (2) Select the range scale graduation on the sight corresponding to the range of the target.
 - (3) Place the target along the horizontal line at the range selected, centered on the double vertical lines of the target.
- b. Sight picture with stationary target (with winds) (Figure 4).

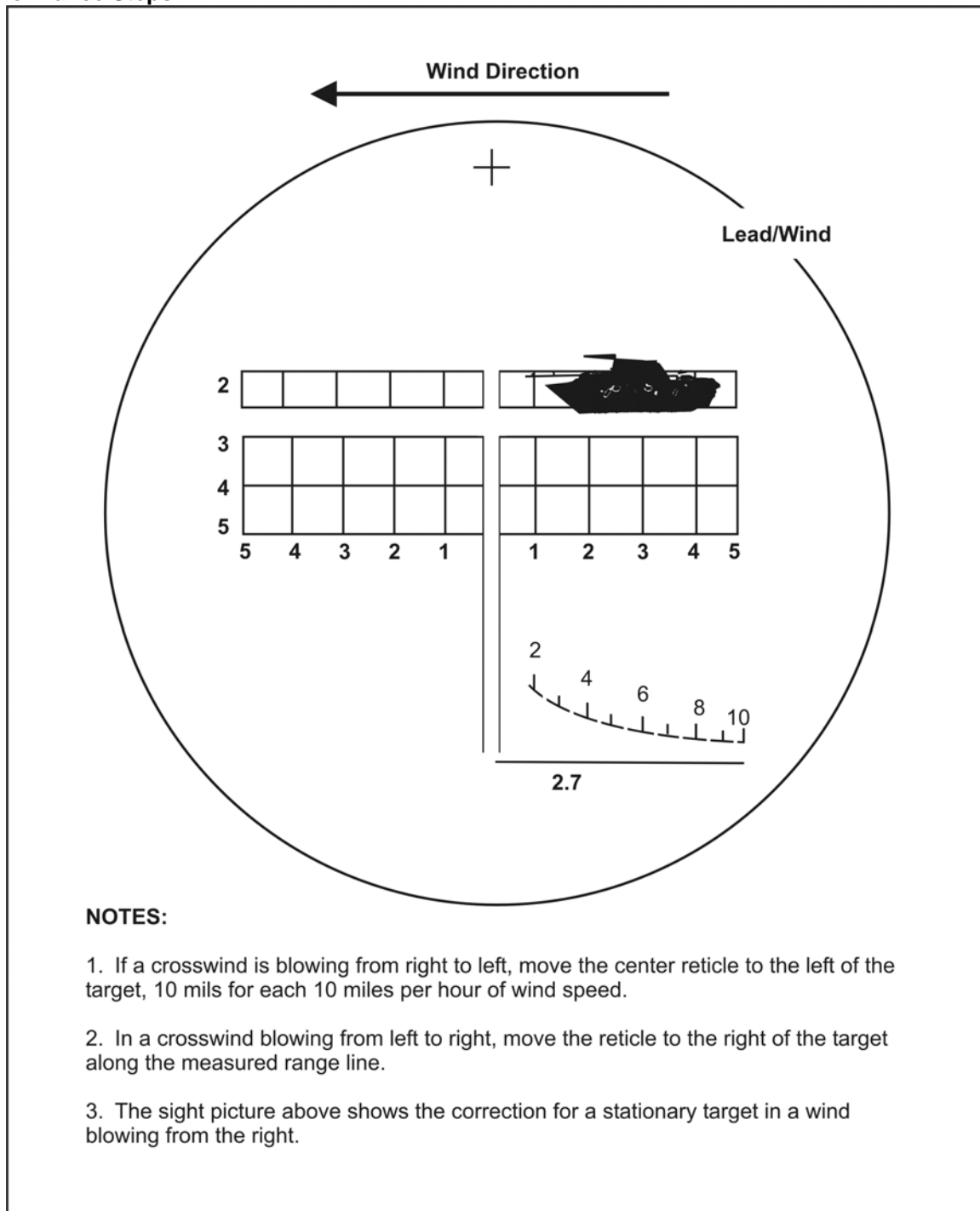
Performance Steps

Figure 4. Sight Picture With Stationary Target With Wind

- (1) Determine range to the target.
 - (2) Select the range scale graduation on the sight corresponding to the range to the target.
 - (3) Place the target along the horizontal (east-west) line at the range selected and center on the vertical (north-south) line corresponding to the correction for winds.
- c. For moving targets establish appropriate leads.

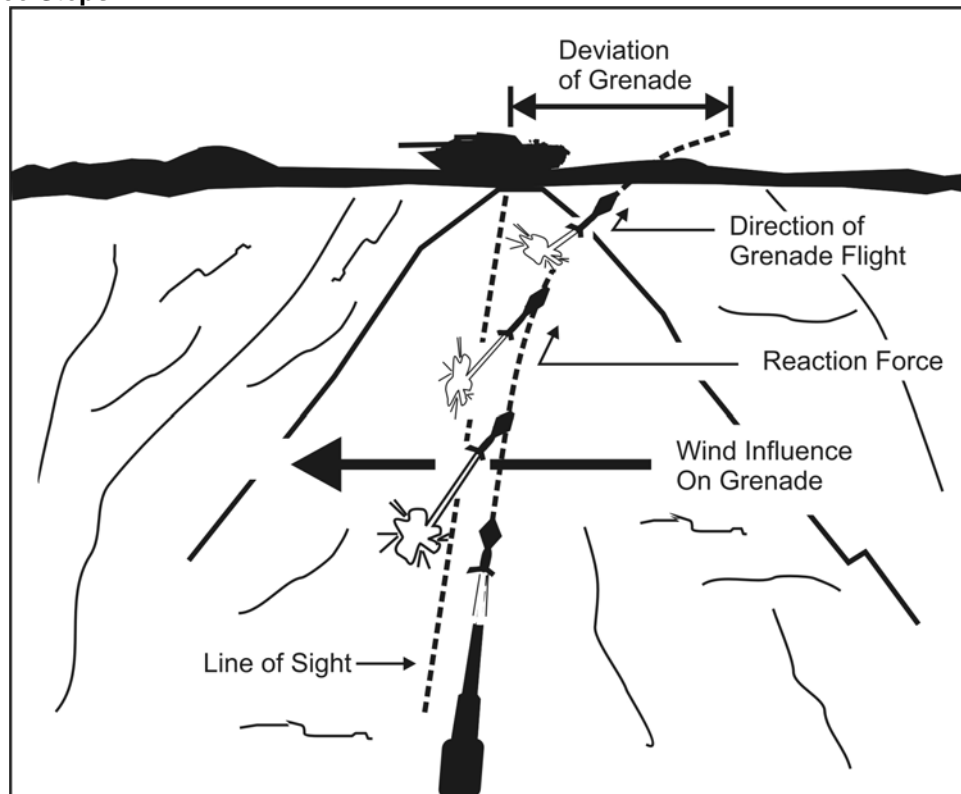
Performance Steps

Figure 5. First Round Hits With Increased Wind Velocity

NOTES:

1. The RPG-7 round, when fired, tends to fly into the wind rather than with the wind. If firing into a crosswind, an RPG-7 gunner must correct his sight picture for wind direction and velocity. Figure 5 illustrates the average effect of first round hits as the wind velocity increases.
2. The round will self-destruct in 4.5 seconds or 920 meters.
9. Fire the RPG-7.
 - a. Ensure the backblast area is clear. Danger area is 20 meters to the rear and 8 meters at the base. Caution is 45 meters to the rear with a base 25 meters wide.
 - b. Cock the weapon.
 - c. Place the weapon off SAFE.
 - d. Use correct sight picture as determined for distance, target attitude, and wind velocity and direction.
 - e. Squeeze the trigger and fire the rocket launcher.
 - f. Observe the burst of the rocket at impact.
 - g. If the gunner misses the target, use the burst-on target method to sight for refire.
10. Misfire Procedures. The gunner performs the misfire procedures as follows:
 - a. Announce, "MISFIRE."
 - b. Check the stud screw and muzzle notch alignment.
 - c. Recock the weapon.
 - d. Sight on the target.
 - e. Pull the trigger.
 - f. If the weapon still fails to fire—
 - (1) Peace Time. Wait five minutes. Keep the weapon pointed downrange.
 - (2) Remove the round.
 - g. Replace the safety cap and pin.

Performance Steps

- h. Check to see whether or not the primer is dented.
 - (1) If the primer is dented: Gently lay the defective round about 100 meters away from troops and pointed downrange.
 - (2) If the primer is not dented: The cause of the misfire is within the weapon. Clear the weapon and inspect it to determine the malfunction.
- i. Check for failure to fire.
 - (1) Check for weak sear or hammer spring.
 - (2) Check that the firing pin is not binding.
 - (a) Push on the firing pin. It should move freely under spring tension.
 - (b) Look down the bore and push up on the firing pin. It should protrude into the tube.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Inspect the round and propellant for serviceability	_____	_____
2. Prepare the rounds for firing.	_____	_____
3. Load the round into the launcher.	_____	_____
4. Assume a correct firing position.	_____	_____
5. Check the backblast area.	_____	_____
6. Fire the launcher.	_____	_____
7. Hit a minimum of two out of three targets.	_____	_____
8. Complete the firing within the five-minute time limit.	_____	_____
9. Apply misfire procedures in correct sequence if weapon fails to fire: <ul style="list-style-type: none"> a. Gunner announces "MISFIRE." b. Check the stud screw and muzzle notch alignment. c. Recock the weapon. d. Attempt to refire the weapon by pulling the trigger. 	_____	_____
10. Correctly apply the following steps if the weapon still fails to fire: <ul style="list-style-type: none"> a. Peace Time. Wait five minutes and kept the weapon pointed up and downrange. b. Remove the round. c. Replace the safety cap and pin. d. Inspect the primer. e. If primer is dented, move the round 100 meters away from friendly troops. f. If primer is not dented, inspect the weapon to determine the malfunction. 	_____	_____

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

References**Required****Related**

STP 31-18B34-SM-TG

Boresight an RPG-7**331-201-2112**

Conditions: Given an RPG-7, a PGO-7V telescope sight with illuminating reticle, boresighting gauge, thread, boresight disc, flat-tip screwdriver, stand or sandbags, and an aiming point 900 meters distant.

Standards: Boresight the RPG-7 within 5 minutes.

Performance Steps

1. Prepare the launcher for boresighting.
 - a. Mount the launcher on a stand or sandbags for support.
 - b. Mount the telescope sight.
 - c. Attach the thread to the boresight gauge to form crosshairs and insert the boresight gauge in the muzzle end of the launcher.
 - d. Place the boresight disc in the rear of the launcher tube.

NOTE: Boresighting is a method used to mechanically align the line of sight with the axis of the barrel, with the temperature setting on the sight indicating 0 degrees. A clearly defined aiming point at least 900 meters away must be used when boresighting.

2. Boresight the launcher.
 - a. Look through the boresight disc at the rear of the launcher tube, and align the crosshairs in the boresight gauge on the aiming point by moving the tube, as required.
 - b. Sight through the telescope sight. The "+" in the upper part of the telescope sight should be aligned with the aiming point. If it is not aligned, adjust the sight.
 - (1) Unscrew the cover of the lateral adjustment screw, and insert a screwdriver in the slit. Turn the screw until the "+" sign is aligned with the vertical plane of the distant aiming point.
 - (2) Loosen the three side screws provided on the temperature correction knob 1.5 to 2 turns. Turn the adjustment screw (in the center) until the "+" is on the same point as the crosshairs of the boresight gauge.
 - (3) Recheck the launcher tube and ensure the crosshairs in the boresight gauge and the "+" sign in the telescope are aligned. If so, the RPG-7 has been boresighted. If not, repeat the procedure.
 - (4) Retighten the three side screws, and replace the cover on the lateral adjustment screw.

Performance Measures

	<u>GO</u>	<u>NO GO</u>
1. Mount the telescope sight.	—	—
2. Form crosshairs and insert the boresight gauge in the muzzle end of the launcher.	—	—
3. Place the boresight disc in the rear of the launcher tube.	—	—
4. Correctly align the telescope sight and the crosshairs in the boresight gauge to the distant aiming point.	—	—
5. Replace all adjustment covers.	—	—
6. Complete all steps within five minutes	—	—

Evaluation Guidance: Score the Soldier GO if all steps are passed. Score the Soldier NO-GO if any step is failed. If the Soldier fails any step, show what was done wrong and how to do it correctly.

APPENDIX A**SAMPLE DA FORM 5164-R (HANDS-ON EVALUATION)
INSTRUCTIONS TO THE TRAINER**

The DA Form 5164-R allows the trainer to keep a record of the performance measures a Soldier passes or fails on each task. Figure A-1 is an example of a completed DA Form 5164-R. Instructions for using this form follow:

1. Obtain a blank reproducible DA Form 5164-R from AR 350-37 that you may reproduce locally on 8 1/2 by 11-inch paper.
2. Enter the title and number of the task to be evaluated at the top of the form.
3. Enter the number of each performance step from the evaluation guide in column "a."
4. Enter each performance from the evaluation guide in column "b" that corresponds to the number in column "a." (Information may be abbreviated, if necessary.)
5. If more than one Soldier will be evaluated on the specific task or if the same Soldier will be evaluated more than once, reproduce the partially completed DA Form 5164-R.
6. Before evaluating a Soldier, enter the date, the evaluator's name, and the Soldier's name and unit.
7. Enter a check in column "c" (PASS) or column "d" (FAIL) as appropriate for each performance step evaluated.
8. Check the status block GO/NO-GO, as appropriate by referring to the evaluation guide for the task standard.

Appendix-2

GLOSSARY**Section I**
Acronyms & Abbreviations

ACCP	Army Correspondence Course Program
ADJ	adjustment
AFAC	air force air controller
ALICE	all-purpose lightweight individual carry equipment
ALO	authorized level of organization; air liaison officer
ALT	alternate; alanine aminotransferase
AM	amplitude modulation
AMC	Army Materiel Command; at my command
AN	annually; artery to nerve
APC	armored personnel carrier
AR	Army regulation; Army reserve; assistant rifleman
ARTEP	Army Training and Evaluation Program
arty	artillery
ASAP	as soon as possible
ASOC	air support operations center
ASP	ammunition supply point
ATO	air tasking order
ATTK SEL	attack select
AUTO	automatic
BCE	battlefield control element
BCS	battery computer system
BCU	battery coolant unit
BFV	Bradley fighting vehicle
BHP	Browning high power
BIT	built-in-test

BNCOC	Basic Noncommissioned Officer Course
BRT	brightness
BUCS	backup computer system
CAL	Center of Army Leadership; caliber
CAS	close air support
CCW	counterclockwise
CFF	call for fire
CHG	charge
Claymore	M18A1 antipersonnel mine
CLP	cleaner lubricant preservative
CLU	command launch unit
CM	civil-military; centimeters; control monitor
CMD	command
CO	company; Commissioned Officer; carbon monoxide; cardiac output
cont	continued
CORR	correction
CP	command post; counterproliferation; checkpoint
CRP	control and reporting post
CTRS	contrast
CTT	common task test
CVT	controlled variable time
D&E	deflection and elevation
DA	Department of the Army; direct action
DA Form	Department of the Army Form
DA Pam	Department of the Army Pamphlet
DD	Defense Department
DD Form	Department of the Defense Form
DDC	detector Dewar cooler

DEFL	deflection
dev	development; deviation
DIR	direction
DIS	Distributed Interactive Simulation; distance
DMD	digital message device
dn	down
DPICM	dual-purpose improved conventional munitions
ELEV	elevation
EOD	explosive ordnance disposal
EOM	extra ocular movement; end of mission
EPW	enemy prisoner of war
etc.	et cetera
EXP	expended
F	Fahrenheit
FAC	forward air controller
FDC	fire direction center
FEBA	forward edge of the battle area
FFE	flame field expedients; fire for effect
FHT	firing head trainer
FIST	fire support team
FLTR	filter
FM	field manual; frequency modulation
FN	foreign nation
FO	forward observer
FOV	field of view
FPF	final protective fires
FPL	final protective line; field protection line
FRAG order	fragmentary order

freq	frequency
FS	fire support; fracture (simple) closed
FSCoord	fire support coordinator
FSN	federal stock number
FSO	fire support officer
ft	feet; firing tables
FTX	field training exercise
GATE ADJ/CTRS & BRT	gate adjust/contrast and brightness
GD	ground distance; soman; guard receiver; grid declination
GMD	grease, molybdenum disulfide
GPL	general purpose lubricating
G-T	gun-to-target
H3	tritium gas
HE	high explosive
HEAT	high-explosive antitank
HEAT-T	high-explosive antitank-tracer
HEQ	high-explosive, quick
HIMS	HMMWV Interchangeable Mount System
HMMWV	high mobility multipurpose wheeled vehicle
HOB	head of bed; height-of-burst
HWTS	heavy weapon thermal sight
i.e.	that is
IAL	infrared aiming light
IAW	in accordance with
ICM	improved conventional munitions; improved capabilities missiles
ID	identification; intradermal
IFF	identification, friend or foe
illum	illumination

IMLC	Infantry Mortar Leader's Course
IMP	impact
IP	intraperitoneal; internet protocol
IR	information requirement; infrared
ITEP	Individual Training Evaluation Program
km	kilometer
kph	kilometers per hour
KTC	Dryad Numeral Cypher/Authentication System (Training)
LARS	left add, right subtract
lat	latitude
LAW	light antitank weapon; lubricating oil arctic weather
LD	line of departure; load
LSA	Logistics Support Analysis; lubricating oil, semifluid, automatic weapons
LSAT	lubricating oil, semifluid, antitank
LTA	local training area; launch tube assembly
LWCM	lightweight company mortar
M	meter
MBC	mortar ballistic computer
MDP	Management Decision Packages; meteorological datum plane
MEDEVAC	medical evacuation
MET	meteorological
METT-TC	mission, enemy, terrain and weather, troops and support available-time available, and civil considerations
MG	major general; machine gun
MK1	MARK1
mm	millimeter
MO	movement order; monthly
MORT	mortar
MOS	military occupational specialty

mph	miles per hour
MTO	message to observer
MWTS	medium weapon thermal sight
NA	not applicable
NATO	North Atlantic Treaty Organization
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NFOV	narrow field of view
No	number
NSN	national stock number; nonstandard number; nothing by mouth
NVS	night vision sight
OD	olive drab
OF	Observed Fire
OP	observation post; occiput posterior
OPLAN	operation plan
OPORD	operation order
ORP	objective rallying point
OT	observer target; operational test
Pam	pamphlet; pralidoxime
para	paragraph
PDF	principal direction of fire; primary direction of fire
PDSQ	point detonating, super quick
PER	personnel; probable error in range
PF	power factor
PL	patrol leader; phase line; preservative lubricant
PMCS	preventive maintenance checks and services
POL	petroleum, oils, and lubricants
POW	prisoner of war; privately owned weapons

Procedure	A standard and detailed course of action that describes how to perform a task.
PROX	proximity
psi	pounds per square inch
PUP	pull-up-point
QT	quarterly
qual	qualification
R	rifleman; right; rimmed
RBC	rifle bore cleaner; red blood cells
RC	Reserve Component
RCF	relative centrifugal force; range correction factor
RCLR	recoilless rifle
rd	road; rounds
RDS EXP	rounds expended
RE	relative effectiveness
RG	range
RP	rally point; release point; role player; registration point; reference point; retained personnel
RSOP	readiness standing operating procedure; reconnaissance, selection, and occupation of position
RT	receiver-transmitter; remote terminal; right; retained person
S	safe
S-3	operations and training officer
SA	security assistance; semiannually; sinoatrial
SEMI	semiautomatic
SF	Special Forces; Standard Form
SGT SEL	sight select
SIGINT	signal intelligence
SIGSEC	signal security

SL	skill level; slight
SM	Soldier's manual
SMCT	Soldier's Manual of Common Tasks
SOI	signal operating instructions
SOP	standing operating procedure
SQ	subcutaneous; squelch; super quick
STP	Soldier training publication
sust	sustainment
T&E	traversing and elevating; traverse and elevation
TAC	tactical; trainer/advisor/counselor
TAC-A	tactical air coordinator (Airborne)
TACAIR	tactical air
TACC	Tactical Army Combat Service Support Computer System; tactical air control center
TACP	tactical air control party
TC	technical coordinator; training circular
TG	task group; trainer's guide; training guide
TGT	target
TL	team leader; tool, lineman; total load
TM	technical manual; tympanic membrane
TOE	table of organization and equipment
TOT	time on target
TOW	tube-launched, optically tracked, wire-guided
TP	target practice; training practice
TPT	training practice tracer
TWS	thermal weapon sight
U	up; unit
US	United States
UTM	universal transverse mercator

VI	visual information; vertical interval
Vol	Volume
VT	ventricular tachycardia; variable time
W/R	when ready
WFOV	wide field of view
wk	weekly
WP	white phosphorus
WPN	weapon

Section II

Terms

attitude

The mental state of a person that influences behavior, choices, and expressed opinions.

common task

A critical task that is performed by every Soldier in a specific SL regardless of MOS.

concealment

The protection from observation or surveillance.

cook off

Functioning of a chambered round of ammunition, initiated by the heat of the weapon.

employment

To commit a force in support of an operation plan.

knowledge

Information or fact required to perform a skill or supported task.

LACE

liquid, ammunition, casualties, equipment

mil*

An angular unit of measurement equal to 1/6400 of a complete revolution (there are 6400 mils in 360 degrees). The mil is used to estimate distance and size based on the mil relation formula: 1 mil equals 1 meter at 1,000 meters. There are 3.375 MOA in 1 mil.

observer target factor

The distance from the observer to the target expressed in thousands to the nearest hundred (for example, 6,300 meters 6.3).

symbol

A visual (graphic or short textual), audio, or audiovisual means used to convey, reinforce, or enhance a line of persuasion.

vulnerability

Manifestation of an unsatisfied or perceived need in an individual or a target audience.

REFERENCES

Army Regulations

AR 210-20 Master Planning for Army Installations 30 July 1993
AR 385-63 Range Safety 19 May 2003

Department of Army Forms

DA FORM 2188-R Data Sheet
DA FORM 2399 Computer's Record
DA FORM 2601-1 Net Data Correction Sheet for Mortars
DA FORM 3675-R Ballistic Message (LRA)
DA FORM 5164-R Hands-On Evaluation

Field Manuals

FM 3-21.71 Mechanized Infantry Platoon and Squad (Bradley) 20 August 2002
FM 3-22.27 MK19, 40-MM Grenade Machine Gun, Mod 3. 28 November 2003.
FM 3-90.1 Tank and Mechanized Infantry Company Team 9 December 2002
FM 6-20-40 Tactics, Techniques and Procedures for Fire Support for Brigade Operations 5 January 1990
FM 6-30 Tactics, Techniques, and Procedures for Observed Fire 16 July 1991
FM 7-7 The Mechanized Infantry Platoon and Squad (APC) 15 March 1985
FM 7-8 The Infantry Platoon and Squad (Infantry, Airborne, Air Assault, Ranger) 22 April 1992
FM 23-27 MK 19, 40-MM Grenade Machine Gun, MOD 3 (SUPERSEDED BY FM 3-22.27) 27 December 1988
FM 23-90 Mortars 1 March 2000
FM 23-91 Mortar Gunnery 1 March 2000
FM 25-4 How to Conduct Training Exercises 10 September 1984
FM 101-5-1 Operational Terms and Graphics 30 September 1997

Other Product Types

FT 81-AI-3 Mortar, 81-mm: M29A1 AND M29; Mortar, 81-mm, Self-Propelled: M125A1 and M125; Carrier, 81-mm Mortar: Tracked, XM775... 1 March 1973

Technical Manuals

TM 9-1005-303-14 Operator's, Organizational, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List): Shotgun, 12 Gage, Winchester Model 1200, Riot Type, 20-Inch Barrel W/E (FSN 1005-921-5483) 21 November 1972
TM 9-1425-429-12 Operator's and Organizational Maintenance Manual: Stinger Guided Missile System Consisting of: Weapon Round Partial (NSN 1427-01-219-7116) (1427-01-219-2902) (1427-01-230-8784) Gripstock (1440-01-170-8618) (1440-01-223-1494) 23 October 2003

Related Publications

Related publications are sources of additional information. They are not required in order to understand this publication.

Army Training and Evaluation Program

ARTEP 7-8-MTP	Mission Training Plan for the Infantry Rifle Platoon and Squad 29 September 1994
ARTEP 7-90-DRILL	Battle, Drills for the Infantry Mortar Platoon, Section, and Squad 26 July 2002

Department of Army Forms

DA FORM 1249	Bridge Reconnaissance Report
DA FORM 2404	Equipment Inspection and Maintenance Worksheet

Department of Army Pamphlets

DA Pam 738-750	Functional Users Manual for The Army Maintenance Management System (TAMMS) 1 August 1994
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Devices

DVC 06-61	GUARDFIST II (1:1) ARTY
DVC 06-61A	GUARDFIST IIA (1:30) ARTY
DVC 07-57	WEAPONEER, M16A1 RIFLE

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FM 3-21.71	Mechanized Infantry Platoon and Squad (Bradley) 20 August 2002
FM 3-23.25	Light Antiarmor Weapons 30 August 2001
FM 3-25.26	Map Reading and Land Navigation 20 July 2001
FM 3-90.1	Tank and Mechanized Infantry Company Team 9 December 2002
FM 4-30.13	Ammunition Handbook: Tactics, Techniques, and Procedures for Munitions Handlers 1 March 2001
FM 5-250	Explosives and Demolitions 30 July 1998
FM 6-15	Tactics, Techniques, and Procedures for Field Artillery Meteorology 13 August 1997
FM 6-20	Fire Support in the Airland Battle 17 May 1988
FM 6-20-30	Tactics, Techniques and Procedures for Fire Support for Corps and Division Operations 18 October 1989
FM 6-20-50	Tactics, Techniques, and Procedures for Fire Support for Brigade Operations (Light) 5 January 1990
FM 6-30	Tactics, Techniques, and Procedures for Observed Fire 16 July 1991
FM 7-7	The Mechanized Infantry Platoon and Squad (APC) 15 March 1985
FM 7-8	The Infantry Platoon and Squad (Infantry, Airborne, Air Assault, Ranger) 22 April 1992
FM 7-10	The Infantry Rifle Company 31 October 2000
FM 7-20	The Infantry Battalion 6 April 1992
FM 7-90	Tactical Employment of Mortars 9 October 1992
FM 20-3	Camouflage, Concealment, and Decoys 30 August 1999
FM 21-75	Combat Skills of the Soldier 3 August 1984
FM 23-9	M16A1 and M16A2 Rifle Marksmanship (SUPERSEDED BY FM 3-22.9) 3 July 1989

FM 23-14	M249 Light Machine Gun in the Automatic Rifle Role (SUPERSEDED BY FM 3-22.68) 26 January 1994
FM 23-27	MK 19, 40-MM Grenade Machine Gun, MOD 3 (SUPERSEDED BY FM 3-22.27) 27 December 1988
FM 23-31	40-MM Grenade Launcher, M203 (SUPERSEDED BY FM 3-22.31) 20 September 1994
FM 23-65	Browning Machine Gun, Caliber .50 HB, M2 19 June 1991
FM 23-90	Mortars 1 March 2000
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FM 44-18-1	Stinger Team Operations 31 December 1984
FM 101-5	Staff Organization and Operations 31 May 1997

Other Product Types

DD FORM 1972	Joint Tactical Air Strike Request
FT 4.2-H-2	Mortar, 4.2-Inch, M30 Carrier, 107-mm Mortar: M106A1 and M106; Firing Cartridge, HE, M329A1; Cartridge, Smoke, WP, M328A1; Cartridge, Tactical CS, XM630 and Cartridge, Illuminating: M335A1 and M335A2 1 August 1968
FT 4.2-K-2	Mortar, 4.2-Inch, M30 and Firing Cartridge, HE, M329A2 1 June 1984
FT 60-P-1	Mortar, 60-mm: M224, Firing Cartridge, HE, M720; Cartridge, HE, M49A4; Cartridge, HE, XM888; Cartridge, TP, M50A3; Cartridge, WP, M302A1 and Cartridge, Illuminating, M83A3 1 March 1980
FT 81-AI-3	Mortar, 81-mm: M29A1 AND M29; Mortar, 81-mm, Self-Propelled: M125A1 and M125; Carrier, 81-mm Mortar: Tracked, XM775... 1 March 1973
ISBN 0710619251	Jane's Infantry Weapons (Edited by Terry J. Gander, Associate Editor Charles Q. Cutshaw; Twenty-fifth Edition, 1999-2000)

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6-FSCATT	Fire Support Combined Arms Tactical Trainer 1 October 1999
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STP 7-11BC24-SM-TG	Soldier's Manual and Trainer's Guide, MOS 11B and C, Infantry, Skill Levels 2/3/4 26 September 2002
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TM 9-1425-484-10	Operator's Manual for Dragon Weapon Guided Missile System, Surface Attack: M47 (Medium Antitank/Assault Weapon System) 31 July 1979
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TM 11-5855-301-12&P	OPERATOR'S AND UNIT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR LIGHT, AIMING, INFRARED AN/PAQ-4B AND AN/PAQ-4C 15 May 2000
TM 11-5855-309-12&P	Operator's and Unit Maintenance Manual (Including Repair Parts and Special Tools List)
TM 43-0003-44	Demilitarization Procedures for Javelin Weapon System and Training Devices 29 October 2003

STP 31-18B34-SM-TG
15 OCTOBER 2004

By Order of the Secretary of the Army:

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